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Stanford's Program of University Personnel Research

By Lewis M. Terman and Karl M. Cowdery, *Leland Stanford Jr. University*

Three hundred thirty-five thousand dollars a year—one-third of Stanford's instructional budget—was being spent on the attempt to educate unsatisfactory or doubtful student material. How some of this waste is now being conserved is here described by Professor Terman and the recently appointed Director of Personnel Research at Stanford, Dr. Cowdery.

THIS paper gives a brief account of what has been accomplished at Stanford University, to date, in the way of student personnel work; what is definitely planned for the immediate future; and what it is hoped the service may ultimately include.

MONEY COST OF TEACHING POOR STUDENTS

In March, 1921, one of the writers (Terman) was invited to address the local Faculty Forum on the use of intelligence tests in colleges and universities. In this address[1] typical findings in other institutions of higher education were summarized and arguments were presented favoring the adoption of such tests at Stanford. It was shown that the students disqualified for poor scholarship in an ordinary year were costing the University, before disqualification, a total of approximately $105,000 over and above their tuition fees. This was about 12 per cent of the University's total annual budget for instructional purposes. At that time the students on probation were being carried at an annual cost of about $230,000. Altogether, the University was spending, roughly, a third of its instructional budget on material officially labeled unsatisfactory or doubtful.

[1] *Intelligence Tests in Colleges and Universities.* L. M. Terman. School and Society, April 23, 1921, Vol. 13, pp. 41–93.

EXPERIMENT IN SELECTING BETTER STUDENTS

A few months later, on recommendation of the scholarship committee and of the executive committee, the Academic Council voted to require the Thorndike Intelligence Examination of all new undergraduate students. The requirement was expressly in the nature of an experiment, as the score earned in the examination was in no way to affect the student's matriculation. The work was placed in charge of a special committee, designated as the Committee for Investigation of Student Ability. At the end of two years, in the autumn of 1923, this

committee published a fairly detailed report[2] of the results of the tests to that date, with averages and score distributions for each quarter of the school year; comparisons of scores by sex, age, major departments, and student activity groups; and numerous correlations of test scores with scholarship records. The report closed with the recommendation that the Thorndike test be required of undergraduate students prior to matriculation, that matriculation be denied to candidates scoring below 50, and that the intelligence score be taken into account in filling the quota from candidates exceeding this minimum. The recommendation was adopted by the Academic Council, notwithstanding the vigorous opposition of a small minority, and the use of the tests for purposes of selection began in the spring of 1924. Under the auspices of the admissions committee, Mr. Cowdery and his assistant gave the tests at 35 centers in California in 1924, and at 37 centers in 1925. Each year the test is also given in various centers throughout the country for the convenience of applicants from other states.

HOW THE QUALITY HAS BEEN IMPROVED

In 1924, 1368 candidates took the examination in competition for the 803 places to be filled. Evidently the requirement had the desired effect of scaring away some of the dullards who would otherwise have reached us, and of attracting a goodly proportion of high-scoring candidates; for, whereas the average score of *matriculated students* in 1921 and 1922 had been only 71, the average score of *applicants* was 75.36 last year, and this year 77.1. Since there are so many more applicants above 50 than can be accepted, the intelligence test score is often the deciding factor in making the selection. The average Thorndike score of *accepted* candidates was 78.7 last year, this year it will probably be 80 or higher. In other words, the average score of entering students has been lifted about ten points in two years, or two-thirds of a standard deviation of the distribution, and at the same time the doors of the University have been definitely closed to candidates ranking in the lowest decile of our former student body. By giving suitable publicity to the fact that Stanford is in the market for brains, and by slightly increasing the weight given to the intelligence score in the sifting of applicants, it would be possible to set the lower limit at what was once our average, and to bring the average to a point which was formerly reached by only 10 or 15 per cent of our student body.

During the year for which figures were quoted at the beginning of this article, exactly 30 per cent of the student population were placed upon probation or were disqualified on account of poor scholarship. The average percentage for this and the three years following was 28.5. In contrast to this situation is that of 1924-5, the first year in which the selection of new students was based partially upon intelligence test results. The proportion of students coming to committee attention for low scholarship dropped to 21.8 per cent.

[2] "Report of Sub-Committee of Committee on Scholarship on Student Ability." Stanford University, 1923.

RESEARCH PROGRAM

This year a new step has been taken by the appointment of a Director of Personnel Research (Mr. Cowdery). The position is attached to the Registrar's office, but no restrictions have been placed on the kinds of services that may be rendered. Beyond the fact that the Director will have charge of the entering intelligence examination, the recording and reporting of its results, and the comparison of score and scholarship records, the position bids fair to become whatever he can make it. Plans for the first year include, in addition to the above, the inauguration of special aptitude tests and the continuation of work already begun on the statistical evaluation of various items in the application credentials and on the diagnosis of vocational interests.

Indices of vocational interest

The test of vocational interest which is being investigated is a modification of the test proposed by B. V. Moore, Freyd and Yoakum. In its revised form this test segregates into three groups, practicing lawyers, doctors, and engineers, so effectively that not more than 15 per cent of those in any one group overlap the curve of any other group. The differentiation is almost as clear-cut for students just graduating in law, medicine, and engineering, and is similar for freshmen students who record themselves as prospective majors in these three subjects. During the past year the test has been given to about 508 Stanford students, a large proportion of whom asked for it as an aid in the selection of a profession.

One task for the immediate future is to revise and extend the interest test so that it will differentiate among a larger number of vocational interest types, and to devise other measures of vocational interests in order to render the diagnosis more certain. Two of the supplementary methods which are to be tried have already been tentatively decided upon. One is a test of the range of spontaneously acquired, non-academic information in each of several fields (such as biological science, physical science, mechanics, literature, the arts, history, civics, business, and law), on the theory that such information will prove to be an index of interest trends. The other is a free association test, resembling that used by Wyman as a measure of intellectual, social, and activity interests, but different in that it will use stimulus words specially selected to yield responses sensitive to the influence of underlying interests having vocational significance. Here it may be necessary to deal with a smaller number of interest catagories of the more fundamental sort; perhaps science as one, the humanities as another, and industry and commerce as a third. Investigation will show to what extent these catagories may be broken up, but at least an attempt will be made to differentiate between interests in physical and biological science. Such a battery of tests does not rest on the assumption that every youth is definitely classifiable in one or another of the vocational interest categories. For all we know, marked specialization of interest may be the exception rather than the rule; if so, it would still be important to identify the exceptions, and it would be impor-

tant to know that special ability rather than special interest was the crucial factor.

The question may be raised whether specialization of vocational interest is not readily discoverable by introspection and self observation, without the aid of tests. The answer is emphatically *no*. The youth has no certain intuitive knowledge as to the psychological nature of the interests which characterize successful men and women in the several professions. Moreover, he is often misled by parental bias, by the personal influence of a favorite teacher, by incomplete or inaccurate knowledge of vocations, and by numerous other circumstances of environment and training. Perhaps half or more of our college freshmen are very uncertain regarding their vocational interests, and the findings of one of the writers (Cowdery) indicate that some who feel fairly certain are probably in error.

Tests of special aptitude

To what degree students who score high on a general intelligence test may have vocationally significant special abilities, as well as specialized interests, and how common such special abilities or weaknesses are, is not known. It is conceivable that, given a high Thorndike score, interest may be the most important factor for one to take account of in deciding whether to pursue law, medicine, biology, psychology, physical science, linguistics, mathematics, engineering, teaching, or commerce. On the other hand, special abilities may, in some cases at least, be the more important. In music, painting, literature, and mechanics, special abilities are probably crucial. Perhaps the same is true of linguistics and mathematics, and it may be true of many other fields of accomplishment.

Investigation in these lines is imperatively called for. If peaks of special ability exist in the higher ranges of general intelligence, as they seem to exist in the middle and lower, it is time we were learning how to identify and triangulate them, for the waste in vocationally misplaced intelligence at the higher levels is a far more tragic affair than misplacement at the lower levels. When the potentially skillful mechanic becomes a third-rate salesman, it is unfortunate; if a potential Shakespeare becomes a second rate scientist, or if a potential Darwin becomes a second rate poet, the whole world loses.

More and more, the ablest of our youth are finding their way to the university. It is there that life career decisions of our brainest men and women take place. Scientific psychology has few if any more important tasks than that of working out diagnostic methods which will afford valid data for the use of university students in deciding upon a life career.

It is planned to begin at Stanford next year the application of certain special ability tests, including such as the Seashore tests of musical ability, the Thurstone tests of engineering aptitude, the MacQuarrie test of mechanical aptitude, and the Zyve test of scientific ability. (The last two have not yet been published.)

As rapidly as they become available, tests of mathematical ability, of literary appreciation, of aptitude for

linguistics, law, history, journalism, and business management, will be put to use. The taking of such tests, whether tests of interests or of special abilities, will be optional with students. Experience is showing that in order to secure subjects for a test of this nature it is only necessary to publish an announcement explaining briefly the purpose of the test and stating that those who take it will be given their interpreted scores. There is no reason why at any university some kind of psychological test should not be offered every Saturday forenoon, now one and now another, so that each type of test would be given several times in the course of a year. Students wishing to take a test could reasonably be charged a fee of twenty-five to fifty cents to cover the cost of blanks and clerical help.

Personality traits

It is our prediction that before many years a test service of this kind will be rendered in all our leading colleges and universities. It may go further and include also tests of character and personality traits. The Kent-Rosanoff test; Laird's modification of the Woodworth questionnaire for the discovery of psychopathic tendencies; the Voelker, Cady, Raubenheimer, and Travis tests of character traits; Moore's test of aggressiveness; Symond's test of conservatism and radicalism; Wyman's test of intellectuality and sociality of interests; Landis' tests of emotionality; Bird's test of sense of humor; Martin's test of physical strength; the standard tests of color blindness,—these give at least a hint of what we may look forward to in the field of personality testing. To predict such a development today is less visionary than it would have been twenty years ago to predict that in the year 1925 school children by the million and college students by the hundred thousand would be given intelligence tests.

UNIVERSITY PERSONNEL SERVICE

We have emphasized those phases of personnel work which have to do with the qualifications, abilities and interests of students, and have dwelt especially on the need of research in new fields of testing and rating. But a personnel department can not confine itself exclusively to research. One of its most important functions is to serve the various committees and officers of the university who are carrying on the administration of teaching and student activities. It must be able to supply, on short notice, significant data needed by the committees on scholarship, admission, registration, vocational guidance, honors courses, graduation, etc. Co-operation with the dean of men and dean of women is definitely implied. The work of the appointment secretary could be made more effective by the use of data available from personnel research. Like the research division of a large industry, the personnel department of a university should, without the handicap of executive or instructional duties, be constantly engaged in testing the materials, processes, and products with which the university is concerned. It must be able to supply many kinds of needed facts regarding student personnel, and a balanced interpretation of those facts, to the committees and administrative officers who can most effectively put them to work.

(Manuscript received August 8, 1925.)

Labor Turnover in the Coal Industry

By Anne Bezanson and Margaret Schoenfeld, *University of Pennsylvania*

Toward the understanding of the labor situation in the coal industry, these writers, from the Industrial Research Department of the University of Pennsylvania, contribute a minute and comprehensive analysis of labor turnover in practically all the important areas. In more than half of the thirty regions studied, a surprisingly high degree of stability was found.

THE United States Coal Commission collected data for the earnings study in sufficiently detailed form to serve as a basis for a series of studies on other phases of labor relations. The earnings form, known as L-1, was a transcription of the payroll, showing earnings and time worked by semi-monthly pay periods. Since the earnings record of each man was continued on the same line, any interruption in employment of the length of two weeks was easily counted, though the cause of the interruption was not indicated. A turnover study based on these data must be limited, therefore, to a contrast of the variation in amount of shifting by the different occupational groups, between mines and between districts.

Some uniform rule had to be adopted to determine when a man would be considered off the roll. An employee was regarded as separated from the roll if he failed to draw pay in two consecutive pay periods when the mine was in operation. The intermittency of mine operation made some special ruling necessary. Normally in an industrial concern the closing of the plant for any considerable period would result in a wide dissemination of the working force. In the case of a mine it is usual to re-open with the major part of the original working force. Employees laid off in this way could not be considered as separations. Idle periods were disregarded, therefore, in counting two pay periods of absence as a separation. Only those employees who did not report for work when the mine started were considered as having been dropped from the roll. The final figure for separations thus includes all resignations and discharges, but lay offs only in so far as employees did not return to work after a period of inactivity at their mine.

The figure for entrances was made up by totalling the re-employments with the new hirings. *Re-employments*, obviously, were employees who drew pay again after two or more pay

periods of consecutive absence. *New hirings* included all new names appearing on the roll at any time during the year after the first pay period in January.

The form of the reported data did not make possible any record of the length of service of mine employees. However, by an audit of the men who began and ended the year on the payroll of the same mine, a figure for *stable force* was secured which gives an index of the relative number of positions subjected to no change in personnel during 1921.

DETERMINING TURNOVER RATIO

The most difficult figure to obtain was the denominator for a turnover ratio. A figure of hours or attendance was not available. No record is kept of the time spent in the mine by miners in tonnage occupations—roughly 60 per cent of all bituminous and 40 per cent of all anthracite employees. At most mines the only indication of the attendance of a tonnage worker is furnished by the tipple record crediting the dumping of one or more cars of coal to the employee's check number. An attendance figure based on this record is subject to an unknown error. On the one hand, one or more cars of coal from the previous day may be dumped in the morning and the employee credited despite the fact that he was not then in attendance; on the other hand, a whole day could be spent clearing away falls of rock, and doing other work preparatory to mining, when no coal was hoisted and no credit for attendance given. The tipple records, then, indicate only roughly the number of days tonnage men start to work, and nothing of the length of time per start.

In the case of day men a record of the number of days and hours is kept and it would seem possible to compute the number in attendance. The error of such a figure varies inversely with the regularity of mine operation. A mine is considered in operation when the tipple is hoisting coal. For some workers paid by the day there is much opportunity for employment when the mine is idle. The computation of attendance by the use of tipple time would greatly inflate the figure for the average number employed whenever operation was irregular.

It was, accordingly, necessary to use a figure that would not be dependent upon days worked. If a mine operated 24 pay periods the average of the semi-monthly payrolls would give a fairly reliable figure. This method of securing the average number employed per pay period was adapted to the records of mines operating irregularly. A figure for each mine was secured by ascertaining the total number of man-pay-periods during the year and dividing by the number of pay periods the mine worked. This figure includes short absences within the pay period but does not weight for absence of one or more pay periods. The figure is considerably less than the *"number reported on L-1,"* which includes all names appearing at any time during the year, and inflates the figures for a district by the number of men who appear on two or more mine rolls during the year.

The study of labor changes in mining

personnel by the United States Coal Commission was confined to records for the year 1921.[1] For that year data were computed for 127 collieries and ten washeries in anthracite regions in Pennsylvania and 684 mines in bituminous coal producing states. To the Coal Commission's findings, this summary adds turnover for identical mines in three bituminous areas in 1920 and 1921. The additional data for a boom year necessarily make some qualifications in the conclusions based on 1921.

TABLE 1

Labor changes in coal mining in the United States, 1921

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employment	New hirings	Total	Percentage	Number	Percentage
Anthracite*										
Total tonnage	80,917	36,495	49,788	136.4	9,032	47,577	56,609	155.1	18,880	51.7
Contract miners	38,359	24,159	17,249	71.4	3,730	14,869	18,599	77.0	15,745	65.2
Contract miners' laborers	41,771	11,849	32,146	271.3	5,204	32,373	37,577	317.1	2,829	23.9
Contract loaders	712	451	349	77.4	87	287	374	82.9	291	64.5
Machine miners	75	36	44	122.2	11	48	59	163.9	15	41 7
Inside day men	37,329	21,715	19,110	88.0	3,770	16,260	20,030	92.2	13,091	60.3
Outside day men	32,363	22,192	12,399	55.9	2,051	9,206	11,257	50.7	15,791	71.2
Total day men	69,692	43,907	31,509	71.8	5,821	25,466	31,287	71.3	28,882	65.8
Total	150,609	80,402	81,297	101.1	14,853	73,043	87,896	109.3	47,762	59.4
Bituminous†										
Total tonnage	146,369	76,092	77,747	102.2	14,537	74,387	88,924	116.9	37,901	49.8
Machine miners	8,533	5,283	4,013	76.0	843	3,303	4,146	78.5	3,294	62.4
Pick miners	57,498	30,918	29,909	96.7	6,108	27,826	33,934	109.8	15,638	50.6
Loaders	80,338	39,891	43,825	109.9	7,586	43,258	50,844	127.5	18,969	47.6
Inside day men	53,518	30,874	28,534	92.4	6,704	21,231	27,935	90.5	18,138	58.7
Outside day men	26,555	14,646	15,033	102.6	3,406	10,586	13,992	95.5	9,116	62.2
Special	858	437	531	121.5	106	421	527	120.6	206	47.1
Total day men	80,073	45,520	43,567	95.7	10,110	31,817	41,927	92.1	27,254	59.9
Total	227,300	122,049	121,845	99.8	24,753	106,625	131,378	107.6	65,361	53.6

* 127 collieries and 10 washeries.

† 684 mines.

This study follows the usual practice of distinguishing employees in occupations outside the mine from those working inside. The only other sub-

[1] Labor Turnover in the Bituminous and Anthracite Coal Industries, by Delos Walker (Report to Congress by the U. S. Coal Commission, 1923).

division that it was feasible to make was a separation of the major tonnage occupations from the inside day occupations. The figures for bituminous districts show machine miners, pick miners and loaders under the tonnage groups and also inside and outside day men; for anthracite the tonnage occupations are contract miners, contract miners' laborers, a few contract loaders, and machine miners. When the turnover is compared for all occupations in mines studied for each industry, the figures are seen to be remarkably uniform. Anthracite has a ratio of separations to average number on the roll of 101.1 against 99.8 in bituminous or a difference of only 1.3 per cent.

The figures in table 1 show some important differences when considered in detail for the major occupational groups. Contract miners in anthracite have a lower turnover (based on average number employed) than any of the tonnage groups in bituminous. On the other hand, the ratio for contract miners' laborers is more than double the figure for any of the other major occupations in either bituminous or anthracite. In the bituminous occupations the highest degree of instability is found among loaders. A striking difference in the two industries is found in the relative attractiveness of inside and outside day occcupations. In anthracite, inside day men change their employment more frequently than outside day men. If inside day men are compared there is found to be a difference of only four per cent in the two industries, whereas the turnover for outside men gives a ratio 47 per cent higher in bituminous than in anthracite. The figures upon which these conclusions are based are given in table 2, though an analysis by districts shows marked differences in the importance of occupations in causing turnover.

TABLE 2

Percentage of occupational distribution

OCCUPATIONS	PERCENTAGE OF AVERAGE ON ROLL	PERCENTAGE OF TOTAL SEPARATIONS	PERCENTAGE OF TOTAL ON L-1
Anthracite			
Contract miners	30.0	21.2	25.4
Contract miners' laborers	14.7	39.5	27.7
Machine loaders	0.6	0.4	0.5
Machine miners	0.1	0.1	0.1
Inside day men	27.0	23.5	24.8
Outside day men	27.6	15.3	21.5
Total	100.0	100.0	100.0
Bituminous			
Machine miners	4.3	3.3	3.8
Pick miners	25.3	24.5	25.3
Loaders	32.7	36.0	35.3
Inside day men	25.3	23.4	23.5
Outside day men	12.0	12.4	11.7
Special group	0.4	0.4	0.4
Total	100.0	100.0	100.0

In any case where the "accessions" figure is higher than the total separations, one can assume that the number in the occupation was increased during the year. In other words, the accessions ratio indicates whether forces were increased or decreased during the year. From this figure in bituminous one may say that, at the 684 mines studied, pick miners and loaders increased, the numbers of inside men

remained the same, while outside forces decreased. In anthracite the accessions figures show how largely contract miners' laborers were augmented by new hirings and re-employments. In this year, while the numbers of contract miners' laborers increased markedly, and contract miners and inside day men increased slightly, outside day men decreased. Thus outside day men were not being increased in either industry and there is nothing in the accessions figure to account for the puzzling difference in stability of inside and outside day men in the two industries.

The last item on table 1 is important since it gives for each occupational group the number of positions unaffected by changes in personnel. For contract miners, out of 24,000 positions, 15,700 were filled by miners who began and ended the year at the same mine; that is to say, no change occurred for 65 per cent of the positions. The turnover was, therefore, caused by the other 8300. The only other occupational group with a higher figure for stability is the outside day men in anthracite. The figure for contract miners' laborers requires special comment. In the coding for occupational classification the turnover study followed the ruling of the earnings study and counted a man as in the occupation from which he drew his major earnings during the year. Since there is promotion for miners' laborers to contract mining and other occupations, this method tended finally to count some of the long service miners' laborers in other groups. Allowance should be made for this factor. Even then, the fact remains that there were 26,900 complete disappearances from the rolls in an occupation with an average of 11,800 employed. Further, out of the 32,373 men newly hired during the year many of whom were engaged within the last three months, only 9086 of these remained on the rolls until the end of December. This is a key occupational group—one upon which the industry is dependent for its supply of skilled miners and even minor executives—with a turnover unparalleled in any other mining occupation in the bituminous or anthracite industries. It is possible that the year 1921 gives an exceptionally high figure. In any industry when forces are being built up there is bound to be much shifting among new employees. The accessions ratio of 317, against a separations figure of 271 shows that the numbers in the occupation were largely increased. One can, therefore, draw no conclusion from the year 1921 as to stability in this occupation in other periods. The situation in that year does point to a personnel problem of magnitude in the follow-up and adjustment of men newly hired in the industry.

The war and the labor conditions following the war affected the numbers employed in anthracite occupations. In 1914 a maximum of 179,679 men had been reached by a gradual increase over a long period.

By the end of 1918, the number, which decreased each year during the war had dropped to 147,121. In 1919, when men were returning from the war and when the opportunities for employment outside the mining industry were less attractive, the number rose to 154,571; in 1920, when all

classes of labor were at a premium, throughout the United States, the number slipped back to 145,074; and in 1921 it rose to 159,499.[2]

TURNOVER IN THE THREE ANTHRACITE DISTRICTS

The anthracite area of Pennsylvania has three producing regions differing widely in mining conditions and methods of operation; the northern, or Wyoming district; the central or Lehigh district; and the southern or Schuylkill district. The latter district has a higher turnover for every occupation except contract miners' laborers than either of the other districts. The average number of contract miners included in this study was 24,159, 51 per cent employed in Wyoming and 14.6 per cent in Lehigh. With only 34.4 per cent of the employees, the Schuylkill district had 57.3 per cent of the separations. The lowest rate of shifting was in the Lehigh district. While the regions differed in the turnover of miners, there was little variation between Wyoming and Schuylkill for miners' laborers. Table 3 shows Lehigh with the lowest proportion of separations to numbers involved in both occupations.

TABLE 3

DISTRICT	CONTRACT MINERS			CONTRACT MINERS' LABORERS		
	Proportion of average on roll	Proportion of separations	Proportion of stable force	Proportion of average on roll	Proportion of separations	Proportion of stable force
Wyoming	51.0	37.7	54.2	72.9	74.4	78.0
Schuylkill	34.4	57.3	27.1	21.4	21.8	16.2
Lehigh	14.6	5.0	18.7	5.7	3.8	5.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 4

DISTRICT	INSIDE DAY MEN			OUTSIDE DAY MEN		
	Proportion of average on roll	Proportion of separations	Proportion of stable force	Proportion of average on roll	Proportion of separations	Proportion of stable force
Wyoming	49.6	42.2	51.7	39.2	34.9	40.4
Schuylkill	32.3	40.1	30.4	39.8	50.3	36.9
Lehigh	18.1	17.7	17.9	21.0	14.8	22.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Inside day occupations range from an average of 74.9 per cent in Wyoming to 109 in Schuylkill. Outside day occupations fall lower than inside in every region. Including boy occupa-

[2] "Coal in 1919, 1920 and 1921" by F. G. Tyron and Sidney A. Hale, p. 484. Washington: Government Printing Office, 1923. (Reprint from Mineral Resources of the United States, 1921—Part II, pp.445-662.)

tions, the figure is only 39.3 in Lehigh, against 49.7 in Wyoming and 70.7 in Schuylkill. This means that for there were no changes in personnel in the course of a year. During the year numbers in inside day occupations

TABLE 5

Labor changes in three anthracite regions, 1921

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Wyoming										
Total tonnage	48,463	20,983	30,469	145.2	5,616	29,383	34,999	166.8	10,754	51.3
Contract miners	17,782	12,311	6,502	52.8	1,525	5,851	7,376	59.9	8,533	69.3
Contract miners' laborers	30,606	8,636	23,923	277.0	4,080	23,484	27,564	319.2	2,206	25.5
Machine miners	75	36	44	122.2	11	48	59	163.9	15	41.7
Inside day men	17,375	10,763	8,057	74.9	1,468	7,004	8,472	78.7	6,771	62.9
Outside day men	12,461	8,698	4,322	49.7	654	3,708	4,362	50.1	6,384	73.4
Total day men	29,836	19,461	12,379	63.6	2,122	10,712	12,834	65.9	13,155	67.6
Total	78,299	40,444	42,848	105.9	7,738	40,095	47,833	118.3	23,909	59.1
Schuylkill										
Total tonnage	25,872	10,928	16,964	155.2	2,978	15,948	18,926	173.2	4,768	43.6
Contract miners	16,448	8,323	9,888	118.8	1,992	8,387	10,379	124.7	4,267	51.3
Contract miners' laborers	9,318	2,540	7,015	276.2	969	7,520	8,489	334.2	459	18.1
Contract loaders	106	65	61	93.8	17	41	58	89.2	42	64.6
Inside day men	13,107	7,021	7,656	109.0	1,594	5,883	7,477	106.5	3,979	56.7
Outside day men	13,745	8,827	6,241	70.7	1,004	4,160	5,164	58.5	5,830	66.0
Total day men	26,852	15,848	13,897	87.7	2,598	10,043	12,641	79.8	9,809	61.9
Total	52,724	26,776	30,861	115.3	5,576	25,991	31,567	117.9	14,577	54.4
Lehigh										
Total tonnage	6,582	4,584	2,355	51.4	438	2,246	2,684	58.6	3,358	73.3
Contract miners	4,129	3,525	859	24.4	213	631	844	23.9	2,945	83.5
Contract miners' laborers	1,847	673	1,208	179.5	155	1,369	1,524	226.4	164	24.4
Contract loaders	606	386	288	74.6	70	246	316	81.9	249	64.5
Inside day men	6,847	3,931	3,397	86.4	708	3,373	4,081	103.8	2,341	59.6
Outside day men	6,157	4,667	1,836	39.3	393	1,338	1,731	37.1	3,577	76.6
Total day men	13,004	8,598	5,233	60.9	1,101	4,711	5,812	67.6	5,918	68.8
Total	19,586	13,182	7,588	57.6	1,539	6,957	8,496	64.5	9,276	70.4

nearly three-fourths of the positions in Wyoming and Lehigh and two-thirds of the positions in Schuylkill, were increased considerably in Lehigh and slightly in Wyoming; outside day occupations were decreased in Schuyl-

kill, and also in Lehigh. The ratio of separations and stable force by districts is given in table 4.

The major occupations in the three anthracite regions are shown in more detail in table 5. In general, the accessions were lowest for all occupations in the Lehigh and highest in the Schuylkill regions, while, with minor exceptions, the stable force was highest in Lehigh and lowest in Schuylkill.

TURNOVER IN THIRTY BITUMINOUS COAL MINING DISTRICTS

Intermittency of production in the bituminous industry makes difficult any sampling of mines that one could regard as representative. From year to year the production of bituminous coal shows a distinct seasonal variation. In so far as the drop in production is represented by a decrease in force instead of the closing of mines, the extremes would influence a turnover figure. Besides the depression of 1921 made for unsteady running time and a total production somewhat differently distributed by months than is normal. After a total production of 53 million net tons in December, 1920, the highest December reported by the United States Geological Survey figures, January, 1921, could claim only 41 million tons, the lowest figure for the month of January since 1915. The lowest monthly production occurred in April with an output ten million tons below the same month of the previous year. The maximum output was in October, with a considerable drop in average monthly tonnage by the end of the year.

The loss in production in 1921 was not evenly distributed throughout the coal producing states. According to the statisticians for the Geological Survey,

> The loss of tonnage in 1921, as compared with 1920, was heaviest in the group of Eastern States and in the group comprising Illinois, Indiana, and Western Kentucky, but the loss in percentage was greatest in the groups comprising the Western and Southwestern States and in Tennessee. Though the coals from Pennsylvania, Maryland, and the Virginias are more widely distributed within the United States than any others, and though they practically monopolize the export trade through ports on the Atlantic seaboard, the output of that group in 1921 declined 77,901,000 tons, or 28.2 per cent. Part of this loss, of course, is due to the relative inactivity in the steel and coke industries in 1921. To this relative inactivity and that in other industries is due also the decline of 22.1 per cent in production in Eastern Kentucky, Ohio and Michigan. Tennessee, which increased its output 27.8 per cent in 1920 lost 33 per cent in 1921, and Alabama, which also felt the depression in the iron and steel trade, saw its modest gain of 4.9 per cent in 1920, changed to a loss of 22.9 per cent in 1921.[3]

In any year widely different geographical areas would be difficult to compare. One cannot claim that for 1921 the 684 mines chosen, distributed in thirty coal producing fields, adequately represent the multiple forces influencing the labor supply in the different areas.

CENTRAL COMPETITIVE FIELD

For the divisions of the Central Competitive Field comprising Indiana, Illinois, Ohio, and Northwestern Pennsylvania, there is no occupation in

[3] Coal in 1919, 1920 and 1921, p. 473.

which the turnover amounted to 100 per cent. The figures are separated by occupation in the following summary for areas in the Central Competitive Field.

For machine miners the figures for separations in the five areas differ little, since the maximum figure—Northwestern Pennsylvania—is only 6 per cent higher than the minimum

TABLE 6

Labor changes in the central competitive field, 1921

OCCUPATION	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Illinois										
Total tonnage	13,497	8,717	5,360	61.5	1,295	5,138	6,433	73.8	5,574	63.9
Machine miners	793	577	268	46.4	73	217	290	50.3	434	75.2
Pick miners	5,655	3,506	2,278	65.0	584	2,310	2,894	82.5	2,133	60.8
Loaders	7,049	4,634	2,814	60.7	638	2,611	3,249	70.1	3,007	64.9
Inside men	5,425	3,546	2,250	63.5	580	1,906	2,486	70.1	2,349	66.2
Outside men	1,505	1,175	456	38.8	155	280	435	37.0	911	77.5
Special group	38	28	11	39.3	1	12	13	46.4	18	64.3
Total day men	6,390	4,721	2,706	57.3	735	2,186	2,921	61.9	3,260	69.1
Total	20,465	13,466	8,077	60.0	2,031	7,336	9,367	69.6	8,852	65.7
Indiana										
Total tonnage	7,328	4,968	2,654	53.4	615	2,969	3,584	72.1	2,962	59.6
Machine miners	316	234	117	50.0	29	94	123	52.6	157	67.1
Pick miners	3,652	2,494	1,314	52.7	343	1,518	1,861	74.6	1,460	58.5
Loaders	3,360	2,240	1,223	54.6	243	1,357	1,600	71.4	1,345	60.0
Inside men	3,337	2,080	1,571	75.5	411	1,333	1,744	83.8	1,228	59.0
Outside men	980	534	532	99.6	123	404	527	98.7	351	65.7
Special group	33	20	11	55.0	2	17	19	95.0	11	55.0
Total day men	4,317	2,614	2,103	80.5	534	1,737	2,271	86.9	1,579	60.4
Total	11,678	7,602	4,768	62.7	1,151	4,723	5,874	77.3	4,552	59.9
Northern Ohio										
Total tonnage	5,297	3,304	2,313	70.0	607	2,211	2,818	85.3	1,948	59.0
Machine miners	467	349	161	46.1	41	124	165	47.3	253	72.5
Pick miners	9	3	1			9	9	300.0	1	33.3
Loaders	4,821	2,952	2,151	72.9	566	2,078	2,644	90.0	1,694	57.4
Inside men	2,238	1,503	976	64.9	305	708	1,013	67.4	958	63.7
Outside men	664	441	283	64.2	84	207	291	66.0	314	71.2
Special group	21	4	19		1	14	15	375.0	2	50.0
Total day men	2,902	1,944	1,259	64.8	389	915	1,304	67.1	1,272	65.4
Total	8,220	5,252	3,591	68.4	997	3,140	4,137	78.8	3,222	61.3

TABLE 6—*Concluded*

OCCUPATION	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Southern Ohio										
Total tonnage	2,115	1,198	1,026	85.6	258	1,061	1,319	110.1	656	54.8
Machine miners	174	127	61	48.0	18	55	73	57.5	89	70.1
Pick miners										
Loaders	1,941	1,071	965	90.1	240	1,006	1,246	116.3	567	52.9
Inside men	484	340	209	61.5	71	165	236	69.4	212	62.4
Outside men	239	173	85	49.1	22	71	93	53.8	125	72.3
Total day men	723	513	294	57.3	93	236	329	64.1	337	65.7
Total	2,838	1,711	1,320	77.1	351	1,297	1,648	96.3	993	58.0
Northwestern Pennsylvania										
Total tonnage	11,216	6,008	4,973	82.8	751	6,155	6,906	114.9	2,952	49.1
Machine miners	825	566	293	51.8	49	263	312	55.1	394	69.6
Pick miners	1,730	961	774	80.5	131	949	1,080	112.4	455	47.3
Loaders	8,661	4,481	3,906	87.2	571	4,943	5,514	123.1	2,103	46.9
Inside men	2,592	1,765	948	53.7	206	867	1,073	60.8	1,204	68.2
Outside men	1,257	839	508	60.5	114	410	524	62.5	628	74.9
Total day men	3,849	2,604	1,456	55.9	320	1,277	1,597	61.3	1,832	70.4
Total	15,065	8,612	6,429	74.7	1,071	7,432	8,503	98.7	4,784	55.6

figure—Northern Ohio. Among pick miners, turnover is higher than for machine miners, reaching 80.5 per cent in the Pittsburgh area. The highest turnover for tonnage occupations is found among loaders in Southern Ohio and in the Pittsburgh area. Indiana ranks lowest for both pick miners and loaders.

The problem of changes in employment is very different when the regions are compared for day occupations. Indiana, which was lowest for the large tonnage groups, has the highest figure for both inside and outside day occupations; Pittsburgh is lowest for inside men and third in turnover for outside men. The figures give no answer to the query as to whether outside or inside day occupations are more attractive to workmen, since the highest turnover in any group is found among outside day occupations in Indiana, while the lowest is found in the outside occupations in Illinois.

The figures illustrate one of the difficulties in comparing turnover by occupations at different mines—one mine may have all undercutting done by hand, using only pick miners—another may have few or no pick miners. Eighty-three of the mines studied in the Central Competitive Field had no pick miners, 27 had no

loaders. Of the total 165 mines which are compared for the two occupations there are only 55 that are the same in each group.

One can compare roughly the occupations in the Central Competitive Field with other areas by showing the proportion of each occupational class represented by the areas and comparing with it the proportion of the total separations caused by this field. With 38.6 per cent of the loaders in the mines studied working in the Central Competitive Field, the area caused only 25 per cent of the separations for this occupation. The proportion of separations for all other occupations is relatively low in these districts. (Table 7.)

TABLE 7

Proportion of totals for bituminous mines studied represented in the central competitive field

FIELDS	PROPORTION									
	Machine miners		Pick miners		Loaders		Inside day men		Outside day men	
	Number on roll	Separations	Number on roll	Separations	Number on roll	Separations	Number on roll	Separations	Number on roll	Separations
Indiana	4.4	2.9	8.1	4.4	5.6	2.8	6.7	5.5	3.6	3.5
Illinois	10.9	6.7	11.3	7.6	11.6	6.4	11.5	7.9	8.0	3.0
Northern Ohio	6.6	4.0	0.1	0.003	7.4	4.9	4.9	3.4	3.0	1.9
Southern Ohio	2.4	1.5			2.7	2.2	1.1	0.7	1.2	0.6
Northwestern Pennsylvania and Pittsburgh	10.7	7.3	3.1	2.6	11.3	8.9	5.7	3.3	5.7	3.4
Total	35.0	22.4	22.5	14.6	38.6	25 2	29.9	20.8	21.5	12.4

While the combined turnover figure for a district is low, there are great differences in the ranking of the different mines within the district. For pick miners, out of 164 mines, nine have a figure of less than 20, while nine more occur well over 180, though one-half the mines had a turnover of less than 70.

LABOR CHANGES IN OHIO IN 1920 AND 1921

Figures for 12 mines in Ohio, identical for 1920 and 1921, show a high figure of nearly 116 for 1920 among outside day men against 87.3 in 1921. The greatest difference in the figures of the two years is found in the numbers re-employed. Twenty-one per cent of the separations in 1920 returned to a mine at which they had previously worked during the year; in 1921, when operation was more irregular, 35 per cent of the separations were re-employed. The stable force remained about the same absolutely between the two years, although there was a difference in turnover due to the increase of machine loaders and outside day men in 1921. (Table 8.)

Since the 12 mines included in the sample have a higher turnover than

the larger group in that state for 1921, no inference can be drawn concerning selected mines in the state.[4] The figure of 67 per cent for 1921 is only 7

TABLE 8

*Labor changes in 12 Ohio mines**

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
1920										
Machine miners	147	78	98	125.6	22	67	89	114.1	34	43.6
Pick miners	19	5	21	420.0	2	15	17	340.0		0.0
Loaders	1,123	564	691	122.5	163	531	694	123.0	275	48.8
Inside men	627	311	368	118.3	73	334	407	130.9	162	52.1
Outside men	193	95	110	115.8	14	109	123	129.5	48	50.5
Total—1920	2,109	1,053	1,288	122.3	274	1,056	1,330	126.3	519	49.3
1921										
Machine miners	133	82	65	79.3	21	50	71	86.6	39	47.6
Pick miners	18	5	7	140.0	2	16	18	360.0	1	20.0
Loaders	1,429	702	837	119.2	261	811	1,072	152.7	278	39.6
Inside men	519	278	317	114.0	148	204	352	126.6	128	46.0
Outside men	170	102	89	87.3	32	62	94	92.2	62	60.8
Total—1921	2,269	1,169	1,315	112.5	464	1,143	1,607	137.5	508	43.5

* The same mines used for each year.

TABLE 9

	1918	1919	1920	1921	1922
Number of mines	29	42	128	134	149
Total employed during year	19,954	26,377	67,280	79,286	84,329
Average number of men on payroll	11,118	15,949	39,268	47,489	57,199
Number of separations	8,836	10,428	28,012	31,797	27,130
Percentage of separations	79.5	65.5	71.3	67.0	47.4

turnover in 1920 and 1921 in the whole state of Ohio.

Figures for Illinois compiled from a report by Dr. Honnold show turnover for the years 1918–22 inclusive for

[4] Illinois Miners' Earnings 1918–1922, compiled by the Illinois Coal Operators Association, Coal Operators Association of the fifth and ninth Districts and the Central Illinois Coal Operators Association, n.d., pp. 48.

per cent above that of the Coal Commission's study with a somewhat different selection of mines. The figures of the prosperous year of 1920 indicate that as compared with industry in general, turnover among mining employees in Illinois was not excessive.

TABLE 10

*Labor changes in Pennsylvania, 1921**

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
Central Pennsylvania										
Total tonnage	14,738	7,920	7,169	90.5	1,340	7,586	8,926	112.7	3,882	49.0
Machine miners	821	566	331	58.5	74	234	308	54.4	371	65.5
Pick miners	4,878	2,324	2,513	108.1	400	2,703	3,103	133.5	1,092	47.0
Loaders	9,039	5,030	4,325	86.0	866	4,649	5,515	109.6	2,419	48.1
Inside men	2,887	2,056	1,165	56.7	296	664	960	46.7	1,527	74.3
Outside men	2,288	1,455	1,074	73.8	265	657	922	63.4	1,029	70.7
Total day men	5,175	3,511	2,239	63.8	561	1,321	1,882	53.6	2,556	72.8
Total	19,913	11,431	9,408	82.3	1,901	8,907	10,808	94.5	6,438	56.3
Somerset										
Total tonnage	4,617	2,024	2,729	134.8	347	2,610	2,957	146.1	834	41.2
Machine miners	185	102	106	103.9	20	88	108	105.9	47	46.1
Pick miners	2,380	1,075	1,333	124.0	211	1,355	1,566	145.7	458	42.6
Loaders	2,052	847	1,290	152.3	116	1,167	1,283	151.5	329	38.8
Inside men	1,191	670	642	95.8	135	448	583	87.0	393	58.7
Outside men	705	392	379	96.7	81	262	343	87.5	253	64.5
Total day men	1,896	1,062	1,021	96.1	216	710	926	87.2	646	60.8
Total	6,513	3,086	3,750	121.5	563	3,320	3,883	125.8	1,480	48.0
Westmoreland										
Total tonnage	7,166	3,917	3,530	90.1	623	3,653	4,276	109.2	2,085	53.2
Machine miners	307	224	109	48.7	23	85	108	48.2	175	78.1
Pick miners	3,073	1,797	1,431	79.6	324	1,431	1,755	97.7	971	54.0
Loaders	3,786	1,896	1,990	105.0	276	2,137	2,413	127.3	939	49.5
Inside men	2,114	1,423	864	60.7	206	650	856	60.2	1,014	71.3
Outside men	1,842	1,096	852	77.7	202	710	912	83.2	759	69.3
Total day men	3,956	2,519	1,716	68.1	408	1,360	1,768	70.2	1,773	70.4
Total	11,122	6,436	5,246	81.5	1,031	5,013	6,044	93.9	3,858	59.9

* This table includes all of Pennsylvania except Northwestern Pennsylvania and Pittsburgh, discussed under the Central Competitive Field.

TABLE 10—*Concluded*

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
Connellsville										
Total tonnage	5,486	2,011	3,679	182.9	593	3,805	4,398	218.7	659	32.8
Machine miners	396	163	248	152.1	44	264	308	190.0	67	41.1
Pick miners	2,161	871	1,468	168.5	289	1,407	1,696	194.7	341	39.2
Loaders	2,929	977	1,963	200.9	260	2,134	2,394	245.0	251	25.7
Inside men	2,217	1,163	1,292	111.1	344	1,007	1,351	116.2	598	51.4
Outside men	1,562	765	1,050	137.3	263	648	911	119.1	392	51.2
Special group	317	158	196	124.1	44	160	204	129.1	55	34.8
Total day men	3,779	1,928	2,342	121.5	607	1,655	2,262	117.3	990	51.3
Total	9,582	4,097	6,217	151.7	1,244	5,620	6,864	167.5	1,704	41.6

PENNSYLVANIA

On the whole in 1921 the turnover for the Central Fields must be regarded as low and, with one or two exceptions, varying little in range. This is noticeable in comparison with some of the non-union areas. Besides the Pittsburgh area, four important bituminous coal regions are shown in the State of Pennsylvania. Of these, Westmoreland, Connellsville and Somerset are not unionized, while Central Pennsylvania is mainly unionized with a scattering of non-union mines. Summaries for these regions are shown in table 10.

The turnover in Connellsville is higher than in other Pennsylvania regions for every occupational group. Somerset is far above Westmoreland and Central Pennsylvania. Among the tonnage occupations, the machine miners, as is usual in bituminous fields, have the lowest turnover; loaders are higher than pick miners everywhere, except in Central Pennsylvania.

Of the day occupations, those working outside the mine show a higher degree of shifting than men employed underground. The high turnover figure for tonnage men in Connellsville can be partially explained by the excess of new employees over separations. This does not account for the turnover of outside and inside day men, especially as the outside employees were decreased in number during 1921. In Somerset there was some increase in the number of pick miners, but loaders were not increased and numbers in day occupations were decreased both inside and outside the mines. The Somerset turnover and some considerable part of the Connellsville rate must be regarded as a problem of extreme importance in those areas. The Westmoreland turnover figures are phenomenally low, since pick miners, loaders and outside day men were increased during the year. In this field 70 per cent of the day men and 53 per cent of all tonnage men employed ended the year on the

payroll of the same mine at which they began the year. Central Pennsylvania has an even more advantageous showing for day occupations, but a slightly lower average of permanency among its employees who began and ended the year at the same mine.

A computation of turnover for twelve mines in the Somerset area gives a higher turnover figure for the prosperous year 1920 than was found in 1921 Not only is the total higher, but employees in all occupations except machine mining and surface work shifted more. (Table 11.)

TABLE 11

Labor changes in 12 Somerset mines

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
1920										
Machine miners	63	34	28	82.4	2	28	30	88.2	22	64.7
Pick miners	1,141	509	626	123.0	115	579	694	136.3	278	54.6
Loaders	1,082	361	616	170.6	58	697	755	209.1	131	36.3
Inside men	916	462	527	114.1	119	450	569	123.2	238	51.5
Outside men	481	281	221	78.6	37	191	228	81.1	180	64.1
Total—1920	3,683	1,647	2,018	122.5	331	1,945	2,276	138.2	849	51.5
1921										
Machine miners	95	52	50	96.2	10	47	57	109.6	25	48.1
Pick miners	1,515	746	739	99.1	109	853	962	129.0	375	50.3
Loaders	1,160	462	750	162.3	61	654	715	154.8	186	40.3
Inside men	772	464	387	63.4	83	272	355	76.5	300	64.7
Outside men	499	271	258	95.2	49	198	247	91.1	193	71.2
Total—1921	4,041	1,995	2,184	109.5	312	2,024	2,336	117.1	1,079	54.1

WEST VIRGINIA

Some districts in West Virginia were combined in the study of labor changes by the Coal Commission and figures shown in six groups for:

Panhandle-Fairmont
Kanawha-Coal River
Logan
Kenova-Thacker
Winding Gulf-New River
Pocahontas-Tug River

In two of these divisions—Logan and Kenova-Thacker—the turnover is over 200 per cent in every occupation. The lowest ratio is found in the Panhandle-Fairmont division—the only area in which the figure for day men is lower than 100 per cent. Outside day occupations average higher than inside though in two areas the turnover is higher for inside day employees. Logan has an amazingly

high figure of 270.5 for outside groups. In fact, in the latter area out of 3970 names on the roll, only 315, or one-fourth of the average number employed, began and ended the year on the payroll of the mine in which the year was started. (Table 12.)

TABLE 12

Labor changes in West Virginia, 1921

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
Panhandle-Fairmont										
Total tonnage	8,390	4,113	4,575	111.2	722	4,644	5,366	130.5	1,814	44.1
Machine miners	994	540	528	97.8	76	510	586	108.5	268	49.6
Pick miners	2,120	1,042	1,123	107.8	197	1,139	1,336	128.2	463	44.4
Loaders	5,276	2,531	2,924	115.5	449	2,995	3,444	136.1	1,083	42.8
Inside men	3,268	1,926	1,705	88.5	393	1,202	1,595	82.8	1,086	56.4
Outside men	1,502	841	820	97.5	138	535	673	80.0	534	63.5
Special group	36	24	15	62.5	1	7	8	33.3	18	75.0
Total day men	4,770	2,767	2,525	91.3	531	1,737	2,268	82.0	1,620	58.5
Total	13,196	6,904	7,115	103.1	1,254	6,388	7,642	110.7	3,452	50.0
Kanawha-Coal River										
Total tonnage	4,402	1,705	2,960	173.6	446	2,859	3,305	193.8	562	33.0
Machine miners	299	168	145	86.3	31	133	164	97.6	91	54.2
Pick miners	429	201	281	139.8	47	213	260	129.4	82	40.8
Loaders	3,674	1,336	2,534	189.7	368	2,513	2,881	215.6	389	29.1
Inside men	2,004	914	1,421	155.5	293	1,094	1,387	151.8	399	43.7
Outside men	810	406	550	135.5	121	356	477	117.5	211	52.0
Special group	32	11	25	227.3	8	26	34	309.1	3	27.3
Total day men	2,814	1,320	1,971	149.3	414	1,450	1,864	141.2	610	46.2
Total	7,248	3,036	4,956	163.2	868	4,335	5,203	171.4	1,175	38.7
Logan										
Total tonnage	2,080	682	1,497	219.5	298	1,500	1,698	249.0	160	23.5
Machine miners	200	78	163	209.0	39	120	159	203.8	25	32.1
Pick miners	237	56	165	294.6	20	201	221	394.6	14	25.0
Loaders	1,643	548	1,169	213.3	139	1,179	1,318	240.5	121	22.1
Inside men	1,416	465	1,080	232.3	179	941	1,120	240.9	121	26.0
Outside men	474	139	376	270.5	55	354	409	294.2	34	24.5
Total day men	1,890	604	1,456	241.1	234	1,295	1,529	253.1	155	25.7
Total	3,970	1,286	2,953	229.6	432	2,795	3,227	250.9	315	24.5

TABLE 12—*Concluded*

OCCUPATIONS	TOTAL ON L-I	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Total	Percentage
Kenova-Thacker										
Total tonnage	732	231	523	226.4	48	563	611	264.5	33	14.3
Machine miners	92	30	81	270.0	14	70	84	280.0	8	26.7
Pick miners	3	1	3			3	3	300.0		
Loaders	637	200	439	219.5	34	490	524	262.0	25	12.5
Inside men	731	230	573	249.1	87	546	633	275.2	39	17.0
Outside men	423	138	305	221.0	33	293	326	236.2	42	30.4
Total day men	1,154	368	878	238.6	120	839	959	260.6	81	22.0
Total	1,886	599	1,401	233.9	168	1,402	1,570	262.1	114	19.0
Winding Gulf-New River										
Total tonnage	2,003	848	1,246	146.9	191	1,254	1,445	170.4	363	42.8
Machine miners	134	60	90	150.0	19	63	82	136.7	33	55.0
Pick miners	311	102	239	234.3	40	219	259	253.9	39	38.2
Loaders	1,558	686	917	133.7	132	972	1,104	160.9	291	42.4
Inside men	1,538	670	1,029	153.6	198	860	1,058	57.9	328	49.0
Outside men	613	296	409	138.2	68	242	310	104.7	149	50.3
Total day men	2,151	966	1,438	148.9	266	1,102	1,368	141.6	477	49.4
Total	4,154	1,814	2,684	148.0	457	2,356	2,813	155.1	840	46.3
Pocohontas-Tug River										
Total tonnage	3,927	1,356	2,763	203.8	459	2,388	2,847	210.0	408	30.1
Machine miners	220	94	179	190.4	48	105	153	162.8	31	33.0
Pick miners	861	374	513	137.2	93	503	596	159.4	169	45.2
Loaders	2,846	888	2,071	233.2	318	1,780	2,098	236.3	208	23.4
Inside men	1,781	712	1,367	192.0	350	1,019	1,369	192.3	246	34.6
Outside men	892	366	640	174.9	189	470	659	180.1	132	36.1
Total day men	2,673	1,078	2,007	186.2	539	1,489	2,028	188.1	378	35.1
Total	6,600	2,434	4,770	196.0	998	3,877	4,875	200.3	786	32.3

OTHER FIELDS

In addition to the regions considered in the Central Competitive Field, Pennsylvania and West Virginia, there are many important fields east and west of the Mississippi. Figures for these districts are shown in tables 13 and 14.

TURNOVER FOR MAJOR TONNAGE OCCUPATIONS

Comparison of turnover in these many fields can be simplified by deal-

ing with the data for each of the major occupations in frequency groupings.

Machine miners and their helpers are a relatively small proportion of the tonnage men. In bituminous mining they form about 4.3 per cent of the average number on the roll.

TABLE 13

Labor changes in states east of the Mississippi, 1921

OCCUPATIONS	TOTAL ON L-J	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Alabama-Georgia										
Total tonnage	4,713	2,925	2,155	73.7	375	1,771	2,146	73.4	1,781	60.9
Machine miners	257	190	96	50.5	23	53	76	40.0	140	73.7
Pick miners	2,129	1,288	964	74.8	172	932	1,104	85.7	766	59.5
Loaders	2,327	1,447	1,095	75.7	180	786	966	66.8	875	60.5
Inside men	2,587	1,460	1,198	82.1	238	954	1,192	81.6	867	59.4
Outside men	1,116	612	595	97.2	124	445	569	93.0	341	55.7
Special group	106	54	103	190.7	33	28	61	113.0	22	40.7
Total day men	3,703	2,072	1,793	86.5	362	1,399	1,761	85.0	1,208	58.3
Total	8,522	5,051	4,051	80.2	770	3,198	3,968	78.6	3,011	59.6
Northeastern-Kentucky										
Total tonnage	6,305	2,215	4,888	220.7	749	3,756	4,505	203.4	790	35.7
Machine miners	262	148	143	96.6	34	102	136	91.9	93	62.8
Pick miners	470	142	398	280.3	58	302	360	253.5	37	26.1
Loaders	5,573	1,925	4,347	225.8	657	3,352	4,009	208.3	660	34.3
Inside men	2,696	1,064	2,155	202.5	368	1,398	1,766	166.0	395	37.1
Outside men	1,540	612	1,220	199.3	237	862	1,099	180.0	254	41.5
Total day men	4,236	1,676	3,375	201.4	605	2,260	2,865	170.9	649	38.7
Total	10,541	3,891	8,263	212.4	1,354	6,016	7,370	189.4	1,439	37.0
South Appalachian Kentucky										
Total tonnage	1,821	648	1,343	207.3	304	1,274	1,578	243.5	179	27.6
Machine miners	129	63	78	123.8	23	78	101	160.3	29	46.0
Pick miners	309	117	192	164.1	28	208	236	201.7	31	26.5
Loaders	1,383	468	1,073	229.3	253	988	1,241	265.2	119	25.4
Inside men	854	354	635	179.4	149	488	637	180.0	141	39.8
Outside men	257	106	218	205.7	58	155	213	200.9	46	43.4
Special group	1	1		0.0				0.0	1	100.0
Total day men	1,111	460	853	185.4	207	643	850	184.8	187	40.7
Total	2,933	1,109	2,196	198.0	511	1,917	2,428	218.9	367	33.1

TABLE 13—*Continued*

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Western Kentucky										
Total tonnage	2,004	1,483	808	54.5	211	909	1,120	74.8	737	49.7
Machine miners	196	155	54	34.8	15	33	48	31.0	122	78.7
Pick miners	181	123	124	100.8	16	61	77	62.6	52	42.3
Loaders	1,727	1,205	630	52.3	180	815	995	82.6	563	46.7
Inside men	960	661	448	67.8	140	384	524	79.3	348	52.6
Outside men	326	229	127	55.5	44	129	173	75.5	139	60.7
Special Group	8	8		0.0					8	100.0
Total day men	1,286	890	575	64.6	184	513	697	78.3	487	54.7
Total	3,398	2,381	1,383	58.1	395	1,422	1,817	76.3	1,232	51.7
Maryland (One-third of the total is in West Virginia)										
Total tonnage	3,475	2,005	1,625	81.0	319	1,718	2,037	101.6	1,008	50.3
Machine miners	217	112	97	86.6	12	127	139	124.1	61	54.5
Pick miners	3,035	1,780	1,403	78.8	291	1,485	1,776	99.8	903	50.7
Loaders	223	113	125	110.6	16	106	122	108.0	44	38.9
Inside men	941	656	401	61.1	97	240	337	51.4	452	68.9
Outside men	512	313	277	88.5	69	158	227	72.5	223	71.2
Total day men	1,453	969	678	70.0	166	398	564	58.2	675	69.7
Total	4,928	2,974	2,303	77.4	485	2,116	2,601	87.5	1,683	56.6
Michigan										
Total tonnage	659	549	147	26.8	50	97	147	26.8	447	81.4
Machine miners	74	64	14	21.9	3	5	8	12.5	56	87.5
Pick miners	30	28	3	10.7	2	2	4	14.3	25	89.3
Loaders	555	457	130	28.4	45	90	135	29.5	366	80.1
Inside men	305	234	84	35.9	21	69	90	38.5	196	83.8
Outside men	110	91	34	37.4	11	20	31	34.1	76	83.5
Total day men	415	325	118	36.3	32	89	121	37.2	272	83.7
Total	1,074	874	265	30.3	82	186	268	30.7	719	82.3
Tennessee										
Total tonnage	3,119	1,580	2,059	130.3	542	1,380	1,922	121.6	757	47.9
Machine miners	119	60	98	163.3	28	48	76	126.7	23	38.3
Pick miners	2,170	1,182	1,366	115.6	376	854	1,230	104.1	628	53.1
Loaders	830	338	595	176.0	138	478	616	182.2	106	31.4
Inside men	1,130	651	697	107.1	203	414	617	94.8	356	54.7

TABLE 13—*Concluded*

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Tennessee—*Concluded*										
Outside men	540	307	357	116.3	119	147	266	86.6	184	59.9
Special group	39	18	17	94.4	4	35	39	216.7	1	5.6
Total day men	1,670	958	1,054	110.0	322	561	883	92.2	540	56.4
Total	4,828	2,556	3,130	122.5	868	1,976	2,844	111.3	1,298	50.8
Virginia										
Total tonnage	2,957	1,181	2,170	183.7	446	1,632	2,078	176.0	443	37.5
Machine miners	160	88	107	121.6	25	64	89	101.1	37	42.0
Pick miners	564	256	402	157.0	69	249	318	124.2	113	44.1
Loaders	2,233	837	1,661	198.4	352	1,319	1,671	199.6	293	35.0
Inside men	1,954	870	1,542	177.2	378	825	1,203	138.3	390	44.8
Outside men	1,384	434	1,211	279.0	218	844	1,062	244.7	162	37.3
Total day men	3,338	1,304	2,753	211.1	596	1,669	2,265	173.7	552	42.3
Total	6,295	2,485	4,923	198.1	1,042	3,301	4,343	174.8	995	40.0

Owing to the stability of the group, the separations of machine miners in 1921, amounted to only 3.3 per cent of the total of all mine separations. From the point of view of labor turnover and earnings, one is discussing an occupation of tonnage men of major importance only because of its key position in mining operations.

The average turnover for all districts amounts to 76 per cent. Actually, no district falls at exactly this figure since 13 districts are below 60 per cent, 16 above 80 per cent and only one between 60 and 80 per cent. One-third of the districts have a turnover of 100 per cent or over. These ten districts with 17.2 per cent of the machine miners in the industry caused 33.9 per cent of the separations.

Of all men employed in the 684 bituminous mines studied, 25.3 per cent were pick miners with 24.5 per cent of the separations. Pick miners had a higher turnover figure in 1921 than machine miners or inside day men, but one lower than loaders or outside day men.

In any comparison of districts, it is necessary to bear in mind that the tonnage produced in some areas may be almost wholly machine mined and the proportion of pick miners to other workers very small. Consequently, a high turnover figure has little significance unless the number of employees involved is considered.

Taking the thirty districts and

TABLE 14

Labor changes in states west of the Mississippi

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Arkansas-Oklahoma-Texas										
Total tonnage	1,371	891	508	57.0	119	579	698	78.3	511	57.4
Machine miners	121	64	60	93.8	10	74	84	131.3	31	48.4
Pick miners	862	582	297	51.0	72	346	418	71.8	337	57.9
Loaders	388	245	151	61.6	37	159	196	80.0	143	58.4
Inside men	716	553	209	37.8	60	159	219	39.6	407	73.6
Outside men	308	221	109	49.3	35	84	119	53.8	180	81.4
Total day men	1,024	774	318	41.1	95	243	338	43.7	587	75.8
Total	2,395	1,665	826	49.6	214	822	1,036	62.2	1,098	65.9
Colorado										
Total tonnage	8,861	3,910	5,411	138.4	728	4,811	5,539	141.7	1,534	39.2
Machine miners	327	168	207	123.2	27	141	168	100.0	71	42.3
Pick miners	5,798	2,689	3,482	129.5	498	3,003	3,501	130.2	1,138	42.3
Loaders	2,736	1,053	1,722	163.5	203	1,667	1,870	177.6	325	30.9
Inside men	2,314	1,337	1,168	87.4	253	910	1,163	87.0	698	52.2
Outside men	1,714	862	1,052	122.0	203	795	998	115.8	505	58.6
Special group	172	69	115	166.7	8	108	116	168.1	36	52.2
Total day men	4,028	2,199	2,220	101.0	456	1,705	2,161	98.3	1,203	54.7
Total	13,061	6,178	7,746	125.4	1,192	6,624	7,816	126.5	2,773	44.9
Iowa										
Total tonnage	6,042	3,701	2,904	78.5	963	2,256	3,219	87.0	1,956	52.9
Machine miners	91	49	45	91.8	8	30	38	77.6	31	63.3
Pick miners	5,446	3,347	2,628	78.5	905	2,071	2,976	88.9	1,748	52.2
Loaders	505	305	231	75.7	50	155	205	67.2	177	58.0
Inside men	2,165	1,432	1,011	70.6	302	632	934	65.2	954	66.6
Outside men	726	481	364	75.7	120	226	346	71.9	322	66.9
Total day men	2,891	1,913	1,375	71.9	422	858	1,280	66.9	1,276	66.7
Total	8,933	5,614	4,279	76.2	1,385	3,114	4,499	80.1	3,232	57.6
Kansas-Missouri										
Total tonnage	2,957	1,719	1,650	96.0	243	1,209	1,452	84.5	909	52.9
Machine miners	38	38	15	39.5	8	6	14	36.8	21	55.3
Pick miners	2,781	1,600	1,556	97.3	205	1,162	1,367	85.4	838	52.4
Loaders	138	81	79	97.5	30	41	71	87.7	50	61.7

TABLE 14—*Concluded*

OCCUPATIONS	TOTAL ON L-1	AVERAGE NUMBER ON ROLL	SEPARATIONS		ACCESSIONS				STABLE FORCE	
			Number	Percentage	Re-employments	New hirings	Total	Percentage	Number	Percentage
Kansas-Missouri—*Concluded*										
Inside men	675	479	308	64.3	64	159	223	46.6	322	67.2
Outside men	214	148	98	66.2	27	55	82	55.4	106	71.6
Special group	41	32	16	50.0	4	8	12	37.5	24	75.0
Total day men	889	627	406	64.8	91	214	305	48.6	428	68.3
Total	3,887	2,378	2,072	87.1	338	1,431	1,769	74.4	1,361	57.2
Montana-Wyoming										
Total tonnage	4,739	2,223	2,616	117.7	515	2,515	3,040	136.8	1,051	47.3
Machine miners	222	144	82	56.9	23	80	103	71.5	97	67.4
Pick miners	3,218	1,462	1,917	131.1	390	1,754	2,144	146.6	642	43.9
Loaders	1,299	617	617	100.0	112	681	793	128.5	312	50.6
Inside men	1,606	893	775	86.8	185	627	812	90.9	508	56.9
Outside men	1,180	688	607	88.2	147	422	569	82.7	422	61.3
Total day men	2,786	1,581	1,382	87.4	332	1,049	1,381	87.3	930	58.8
Total	7,525	3,804	3,998	105.1	857	3,564	4,421	116.2	1,981	52.1
Utah-New Mexico										
Total tonnage	3,223	1,405	2,132	151.7	402	1,652	2,054	146.2	502	35.7
Machine miners	96	61	37	60.7	6	36	42	68.9	39	63.9
Pick miners	1,992	865	1,409	162.9	280	1,019	1,299	150.2	298	34.5
Loaders	1,135	479	686	143.2	116	597	713	148.9	165	34.4
Inside men	1,162	603	744	123.4	177	496	673	111.6	284	47.1
Outside men	593	312	342	109.6	60	251	311	99.7	162	51.9
Special group	14	10	3	30.0		6	6	60.0	7	70.0
Total day men	1,755	915	1,086	118.7	237	747	984	107.5	446	48.7
Total	4,992	2,330	3,221	138.2	639	2,405	3,044	130.6	955	41.0
Washington										
Total tonnage	1,029	655	334	51.0	68	432	500	76.3	404	61.7
Machine miners	1	1		0.0		1	1	100.0		
Pick miners	1,014	650	332	51.1	67	418	485	74.6	404	62.2
Loaders	14	4	2	50.0	1	13	14	350.0		
Inside men	230	164	67	40.9	15	66	81	49.4	118	72.0
Outside men	279	174	103	59.2	21	94	115	66.1	130	74.7
Total day men	509	338	170	50.3	36	160	196	58.0	248	73.4
Total	1,538	993	504	50.8	104	592	696	70.1	652	65.7

TABLE 15

Frequency of grouping of occupational turnover by districts in intervals of 20 per cent

NO MEN	UNDER 20	20 AND UNDER 40	40 AND UNDER 60	60 AND UNDER 80
Machine miners				
Washington		Michigan..... 21.9 Western Kentucky..... 34.8 Missouri Kansas..... 39.5	Northern Ohio..... 46.1 Illinois..... 46.4 Southern Ohio..... 48 0 Westmoreland..... 48.7 Indiana..... 50.0 Alabama and Georgia..... 50.5 Northwestern Pennsylvania. 51.8 Central Pennsylvania..... 58.5 Montana-Wyoming..... 56.9	Utah-New Mexico..... 60.7
Pick miners				
Northern Ohio Southern Ohio Kenova-Thacker	Michigan..... 10.7		Arkansas-Oklahoma-Texas.. 51.0 Washington..... 51.1 Indiana..... 52.7	Illinois..... 65.0 Alabama-Georgia..... 74.8 Iowa..... 78.5 Maryland..... 78.8 Westmoreland..... 79.6
Loaders				
Washington		Michigan..... 28.4	Western Kentucky..... 52.3 Indiana..... 54.6	Illinois..... 60.7 Arkansas-Oklahoma-Texas.. 61.6 Northern Ohio..... 72.9 Alabama-Georgia..... 75.7 Iowa..... 75.7
Inside men				
		Michigan..... 35.9 Arkansas-Oklahoma-Texas.. 37.8 Washington..... 40.9	Northwestern Pennsylvania. 53.7 Central Pennsylvania..... 56.7	Missouri-Kansas..... 64.3 Westmoreland..... 60.7 Southern Ohio..... 61.5 Maryland..... 61.1 Illinois..... 63.5 Northern Ohio..... 64.9 Western Kentucky..... 67.8 Iowa..... 70.6 Indiana..... 75.5
Outside men				
		Michigan..... 37 4 Illinois..... 38.8	Southern Ohio..... 49.1 Arkansas-Oklahoma-Texas.. 49.3 Western Kentucky..... 55.5 Washington..... 59.2	Northwestern Pennsylvania. 60.5 Northern Ohio..... 64.2 Missouri-Kansas..... 66.2 Central Pennsylvania..... 73.8 Westmoreland..... 77.7

80 AND UNDER 100	100 AND UNDER 120	120 AND UNDER 140	140 AND UNDER 160	160 AND UNDER 180
Machine miners				
Kanawha-Coal River..... 86.3	Somerset..... 103.9	Virginia..... 121.6	Winding Gulf-New River...150.0	Tennessee..... 163.3
Maryland..... 86.6		Colorado..... 123 2	Connellsville..... 152.1	
Iowa..... 91.8		Southern-Kentucky..... 123.8		
Arkansas-Oklahoma-Texas... 93.8				
Northeastern Kentucky..... 96.6				
Panhandle-Fairmont..... 97.8				
Pick miners				
Northwestern Pennsylvania.. 80.5	Western Kentucky..... 100.8	Somerset..... 124.0	Virginia..... 157.0	Utah-New Mexico..... 162.9
Missouri-Kansas..... 97.3	Panhandle-Fairmont.. .... 107.8	Colorado..... 129.5		Southern Kentucky..... 164.1
	Central Pennsylvania..... 108.1	Montana-Wyoming..... 131.1		Connellsville..... 168.5
	Tennessee..... 115.6	Pocahontas- Tug River.... 137.2		
		Kanawha Coal River..... 139.8		
Loaders				
Central Pennsylvania..... 86.0	Montana-Wyoming..... 100.0	Winding Gulf-New River.. 133.7	Utah-New Mexico..... 143.2	Colorado..... 163.5
Northwestern Pennsylvania.. 87.2	Westmoreland..... 105.0		Somerset..... 152.3	Tennessee..... 176.0
Southern Ohio..... 90.1	Maryland..... 110.6			
Missouri-Kansas..... 97.5	Panhandle-Fairmont..... 115.5			
Inside men				
Alabama-Georgia..... 82.1	Tennessee..... 107.1	Utah-New Mexico..... 123.4	Winding Gulf-New River.. 133.6	Virginia..... 177.2
Montana-Wyoming..... 86.8	Connellsville..... 111.1		Kanawha-Coal River..... 155.5	Southern Kentucky..... 179.4
Colorado..... 87.4				
Panhandle-Fairmont..... 88.5				
Somerset..... 95.8				
Outside men				
Montana-Wyoming..... 88.2	Utah-New Mexico..... 109.6	Colorado..... 122.0		Pocahontas-Tug River..... 174.9
Maryland..... 88.5	Tennessee..... 116.3	Kanawha-Coal River..... 135.5		
Somerset..... 96.7		Connellsville..... 137.3		
Alabama-Georgia..... 97.2		Winding-Gulf-New River.. 138.2		
Panhandle-Fairmont..... 97.5				
Indiana..... 99.6				

TABLE 15—*Concluded*

180 AND UNDER 200	200 AND UNDER 220	220 AND UNDER 240	240 AND UNDER 260	260 AND OVER
Machine miners				
Pocahontas-Tug River..... 190.4	Logan..... 209.0			Kenova-Thacker..... 270.0
Pick miners				
		Winding Gulf-New River.. 234.3		Northeastern Kentucky... 280.3 Logan..... 294.6
Loaders				
Kanawha-Coal River..... 189.7 Virginia..... 198.4	Connellsville..... 200.9 Logan..... 213.3 Kenova-Thacker..... 219.5	Northeastern Kentucky... 225.8 Southern Kentucky..... 229.3 Pocahontas-Tug River..... 233.2		
Inside men				
Pocahontas-Tug River..... 192.0	Northeastern Kentucky... 202.5	Logan..... 232.3	Kenova-Thacker..... 249.1	
Outside men				
Northeastern Kentucky.... 199.3	Southern Kentucky..... 205.7	Kenova-Thacker..... 221.0	Logan..... 270.5 Virginia..... 279.0	

grouping the turnover figures in frequency intervals varying by 20 per cent one finds the grouping given in table 15.

From table 15 it is evident that Westmoreland, Pennsylvania, Maryland and Alabama fall between the areas of the Central Competitive Field. Since so many districts are concentrated in the groups between 40 and 140, one must account for the eight districts with turnover far above the average of 96.7, for all areas. Excepting Ohio, which has few pick miners, all areas of the Central Competitive Field are less than 100 per cent. Virginia, Connellsville, Southeastern Kentucky and Utah had turnover of more than 150, and three regions in West Virginia had a figure far above 200 per cent.

The average turnover of 109.9 for loaders is higher than that for pick miners. The separations amounted to 36.0 per cent of the total though the occupational group comprised 32.7 per cent of the men. Out of the 30 districts, 16 have a turnover figure of more than 100 per cent.

When turnover is compared for pick miners and loaders, mine by mine, it is found that the largest number of mines for both occupations fall in the 40 to 60 per cent turnover group. A frequency curve of these data would show the loaders' curve more symmetrical than the pick miners', and higher in all groups above 180, with one exception. In comparing these occupations mine by mine, it is, of course, unlikely that the identical mines are included in the two groups—203 of the 684 mines employ no pick miners, 199 have no loaders.

Table 16 shows the percentage of loaders on the rolls of the various districts with the percentage of the total separations caused by that area; for instance, Central Pennsylvania with 12.6 per cent of the average number of loaders had 9.9 per cent of the separations, while by contrast, Northeastern Kentucky with 4.8 per cent of the number on the roll had 9.9 per cent of all separations for loaders.

TURNOVER FOR DAY MEN

By contrast with anthracite, inside day men in the bituminous mines have a lower turnover than outside day men. The ratio of separations to average number on the roll was 92.4 for inside day men and 102.6 for outside. The inside men constituted 25.3 per cent of the number on the roll and 23.4 per cent of the total mine separations; outside men formed 12.0 per cent of the average number enrolled, but made up 12.4 per cent of the separations.

Table 15 shows the grouping of turnover for inside and outside men by areas. Eleven of the areas for inside, and 14 for outside, have turnover above 100 per cent. Five areas for inside and six for outside are below 60. The modal interval is 60 to 80 where are found inside men in all the areas of the Central Competitive Field except Northwestern Pennsylvania and Pittsburgh, which has a figure as low as 53.7. The highest areas for inside men are the small district of Kenova-Thacker and Logan and Northeastern Kentucky. For outside men Michigan and Illinois have the lowest separations figures

TABLE 16

Percentage distribution by districts

DISTRICT	PERCENTAGE							
	Pick miners		Loaders		Inside men		Outside men	
	Number on roll	Separations	Number on roll	Separations	Number on roll	Separations	Number on roll	Separations
Central Pennsylvania	7.5	8.4	12.6	9.9	6.7	4.1	10.0	7.2
Somerset, Pa	3.5	4.5	2.1	2.9	2.2	2.2	2.7	2.5
Westmoreland, Pa	5.8	4.8	4.8	4.5	4.6	3.0	7.5	5.7
Connellsville, Pa	2.8	4.9	2.4	4.5	3.8	4.5	5.2	7.0
Northwestern Pa	3.1	2.6	11.2	8.9	5.7	3.3	5.7	3.4
Cumberland-Piedmont, Md	5.7	4.7	0.3	0.3	2.1	1.4	2.1	1.8
Panhandle-Fairmont, West Va	3.4	3.8	6.4	6.7	6.2	6.0	5.7	5.4
Kanawha-Coal River, West Va	0.6	0.9	3.4	5.8	3.0	5.0	2.8	3.7
Logan, West Va	0.2	0.6	1.4	2.7	1.5	3.8	1.0	2.5
Kenova-Thacker, West Va	0.003	0.01	0.5	1.0	0.7	2.0	0.9	2.0
Winding-Gulf-New River, West Va	0.3	0.8	1.7	2.1	2.2	3.6	2.0	2.7
Pocahontas-Tug River, West Va	1.2	1.7	2.2	4.7	2.3	4.8	2.5	4.3
Virginia	0.8	1.3	2.1	3.8	2.8	5.4	3.0	8.0
Northeastern Kentucky	0.5	1.3	4.8	9.9	3.4	7.6	4.2	8.1
South Appalachian Kentucky	0.4	0.6	1.2	2.4	1.1	2.2	0.7	1.5
Tennessee	3.8	4.6	0.8	1.4	2.1	2.5	2.1	2.4
Alabama-Georgia	4.2	3.2	3.6	2.5	4.7	4.2	4.2	3.9
Michigan	0.1	0.01	1.2	0.3	0.8	0.3	0.6	0.2
Northern Ohio	0.01	0.003	7.4	4.9	4.9	3.4	3.0	1.9
Southern Ohio			2.7	2.2	1.1	0.7	1.2	0.6
Indiana	8.1	4.4	5.6	2.8	6.8	5.5	3.6	3.5
Illinois	11.3	7.6	11.6	6.4	11.5	7.9	8.0	3.0
Western Kentucky	0.4	0.4	3.0	1.4	2.1	1.6	1.6	0.9
Iowa	10.8	8.8	0.8	0.5	4.6	3.6	3.3	2.4
Kansas-Missouri	5.2	5.2	0.2	0.2	1.6	1.1	1.0	0.7
Oklahoma-Arkansas-Texas	1.9	1.0	0.6	0.3	1.8	0.7	1.5	0.7
Montana-Wyoming	4.7	6.4	1.6	1.4	2.9	2.7	4.7	4.0
Utah-New Mexico	2.8	4.7	1.2	1.6	2.0	2.6	2.1	2.3
Colorado	8.7	11.6	2.6	3.9	4.3	4.1	5.9	7.0
Washington	2.1	1.1	0.01	0.004	0.5	0.2	1.2	0.7
Total	99.913	99.923	100.01	99.904	100.0	100.0	100.0	100.0

while at the other extreme are Virginia, Logan, Kenova-Thacker, and Southern Kentucky with turnover above 200 per cent.

Inside men in Virginia with 2.8 per cent of the total number on all rolls, had 5.4 per cent of the total separations, while Central Pennsyl-

vania with 6.7 per cent of the number enrolled had 4.1 per cent of the separations. For outside men, Virginia with 3 per cent of the men, had 8 per cent of the separations.

CONCLUSIONS

Labor turnover in any industry may be affected by the conditions of business activity in other industries. So far we are unable to estimate what part of labor changes is within the control of the management, because occasioned by conditions within the plant; what part is due to conditions outside. It may be that industries with yard employments and certain types of working conditions will regularly and normally have a higher turnover than industries without these conditions. What is normal turnover in one area may be highly abnormal for a similar plant in another locality. Before this situation is studied it would be unsafe to say that turnover was abnormally high or low, whatever the amount of the gross figure upon which the statement was based. If, however, similar plants in the same locality and dependent upon the same labor market show widely different amounts of turnover, one can conclude that labor policy, or working conditions or internal planning in some way is having a salutory effect in controlling one form of cost in favor of another form.

Probably this is as far as the study of turnover in the mining industry can be expected to go. The figures do not make possible a comparison of labor changes in terms of causes. They do furnish a comparison of mines closely located, dependent upon the same sources of labor supply and similar markets for product.

From time to time studies have been made of turnover, in a few plants in the same industry. Rarely is it possible to compare a large number of plants with similar occupations located in the same area. The very fact that occupations are comparable from mine to mine would lead one to expect a high turnover. The industry is dependent, of course, upon experienced men who must shift more or less within the industry instead of into another industry. However, the large number of workings, the intermittency of operation and the surplus of workers would seem to furnish a setting for an abnormal amount of shifting of the labor force. On the contrary, what is found, except in a few areas, is a high degree of stability. In 17 out of the 30 regions studied, 50 per cent or more of the employees began and ended the year on the roll of the same mine.

A Short Course in Training for Assistant Buyers

By James H. Greene, *Pittsburgh, Pa.*

The training of subordinates is an integral function of management. The salespeople of a large store are now receiving more and better training because the assistant department heads who supervise them have had the advantage of instruction in how to train them. Dr. Greene,[1] Personnel Director of Kaufmann's Department Store, Pittsburgh, describes this short normal course for assistant buyers.

THE present article describes a short course for assistant buyers and heads of stock, designed to help them train salespeople. It was hastily organized and given to meet an immediate emergency, a type of situation not uncommon in the field of commercial and industrial training.

The course for department store buyers and assistants prepared by Miss Fredonia Jane Ringo of the Research Bureau for Retail Training, University of Pittsburgh, and reported in a previous issue of this Journal,[2] covered a period of approximately eight months as finally installed and used in the Pittsburgh stores. It included among its students not only assistant buyers and heads of stock, but likewise salespeople and others who had aspirations to become assistants and who were selected on the basis of their probable success. It covered a wide range of subjects and was scientifically devised to include all of the activities and problems of the buyer and to furnish in addition the necessary background. The short course described in this paper was designed to furnish aid with but one activity, namely the training of salespeople in the department, "on the job," by the assistant buyer or head of stock.

When Kaufmann's Department Store made it a matter of policy that each assistant buyer should assume the rôle of teacher or "trainer on the job" in his or her department, some sort of preparation for the work became necessary in order to make this policy effective. The short course as a quick means of giving minimum essentials in mass instruction, to be followed later by personal work, was decided upon. The short course is a much used educational vehicle in the

[1] On September 1, Dr. Greene became Director of Extension, Research Bureau for Retail Training, University of Pittsburgh.

[2] *What Buyers Need to Know.* Fredonia Jane Ringo. Journal of Personnel Research, November, 1924, Vol. 3, No.7, pp. 235–243.

academic field. But to the writer's knowledge its use in training in the retail field was new. While this pioneer effort was necessarily a crude affair and its final results are yet to be recorded, a description of the plan and program may be of interest to organizations that have a similar problem to meet.

WHY THE ASSISTANT BUYER?

The question may be raised as to why the assistant buyer was singled out to undertake the training work. When the firm became convinced that the initial store training in system and salesmanship given by the Training Department in classes must be supplemented by training on the job in the department, it was readily appreciated that this was not a job for the ordinary Training Department. Either the Training Department would have to be enlarged or someone in each department must be found to do the work. The former plan would have been expensive and would have resulted in duplication of effort, since training and supervision are practically the same. The general policy of most stores is that department training is a responsibility of the buyer. While many buyers who have a "flare" for this sort of thing do an excellent piece of work, it must be admitted that this duty is more often delegated than not. Stores with a "sponsor system" usually delegate such training to the sponsor. It was felt in this instance that training on the job was important enough to be the chief responsibility of an executive, whose experience and position would put the stamp of authority upon it. Absence in the market and other duties eliminated the buyer so the assistant buyer was decided upon. Buyers in very small departments and heads of stock in very large departments were the only exceptions.

SELLING THE IDEA

When the completed plan was approved by the president of the company, he presented it to the board of merchandise managers who approved the plan and each pledged its success in the departments for which he was responsible.

Each merchandise manager then called a meeting of his buyers and their assistants and "sold" the plan to them. The statement was made that the house believed that the training of its sales force was the most important factor in securing the ideal of service which had been set up. Assistant buyers were told that their records of achievement as trainers would be considered in connection with promotion—in other words, training was to be considered the major function of the assistant buyer. Each assistant buyer was then requested to attend a short course, consisting of four meetings of one hour each. The real problem became that of organizing the material so that it could be effectively presented in the time allotted.

THE CONTENT OF THE COURSE

It was decided that the training responsibilities of the assistant buyer as regards content could be divided into the following groups:

1. Stock location and care of stock
2. Merchandise information
3. Facts regarding new merchandise
4. Technique of selling
5. Department meetings
6. Training extra and contingent salespeople.

Helps in methods of giving this training were necessary, and in addition methods of handling and supervising people should be included. Brief but comprehensive material had been prepared by the Retail Bureau of the University of Pittsburgh on subjects, 1, 3 and 4.

With these facts as a basis, the following course was arranged:

First Meeting:
- Making the new employee feel at home
- What the Training Department does
- Teaching stock location and care
- Essentials of merchandise information
- The use of merchandise questionnaires given to all new salespeople

Second Meeting:
- Training salespeople in selling on the job

Third Meeting:
- Handling salespeople—simple everyday use of psychology

Fourth Meeting:
- Developing your own personality—use of a personality rating scale devised by W. W. Charters of the Retail Bureau

The first half-hour was devoted to a simple presentation of the material by different members of the Training Department and the last half-hour was devoted to a discussion. Every effort was made to draw upon the experience of members of the group in the use of different methods.

The assistant buyers were divided into groups, all under one merchandise manager constituting a group. When the meetings, held Monday, Tuesday, Wednesday and Thursday mornings at 9:00 a.m. for one group were completed another group was started. Since there were five groups, a period of five weeks was necessary to cover all of the departments.

FOLLOWING UP THE WORK

As is the case in any pioneer effort, technique is often developed and perfected while the work is in progress. The need for some tangible and concrete outcome of the course was felt at the very beginning. As the meetings with the first group progressed the idea evolved of requiring every assistant buyer to make a training plan for his department. Just what form this should take was not at all clear to the Training Department but it was felt that no matter how crude the effort the training program could be made a point of contact for further training. This is one of the most important factors in the success of a training department. If it can get the organization into the habit of coming to it with problems and is able to give real assistance, it has established itself on a firm foundation and can render real service to the institution.

Accordingly, during the third meeting, the subject of a training program was developed. The assistants were familiar with sales plans and this was used to introduce it. Some of the training programs were very good and showed interest and thought on the part of the assistant. One such is reproduced.

TRAINING PROGRAM FOR NEW SALESPEOPLE IN CHINA AND ALLIED DEPARTMENTS

(All salespeople to be previously trained in store routine in Training Department)

FIRST WEEK

First Day—8:30 to 9:30

A. Introduction of new salesperson to "regulars"
B. Trip through department to get general idea of sections
C. Taught location of stock by head of stock
D. Place in section of slow selling merchandise to become gradually accustomed to department routine without getting into difficulty

4:30—Checking up and testing new employee

Second day—8:30 to 9:30

A. Care of stock taught by assistant buyer and head of stock
B. Cleanliness and orderliness
C. Value of well displayed merchandise
D. Placed again in comparatively slow moving department

4:30—Testing for knowledge acquired

Third day—8:30 to 9:30

A. Merchandise talk by buyer or assistant buyer telling of quality, style, how manufactured, and history
B. New merchandise displayed and introduced.
C. Place new girl in section where greater knowledge and skill will be required

4:30—Testing

Fourth day—8:30 to 9:30

A. Salesmanship taught by assistant buyer and head of stock
1. Approach
2. Selection of customer's needs
3. Special feature of merchandise to be explained to customer
4. Closing of sale
5. Use courtesy, common sense and initiative, to become salespeople and not order takers
6. Inform clerk that check-up will be taken following week, so make herself as proficient as possible in all points previously explained

4:30—Follow-up and discussion of day's contacts with customers

SECOND WEEK

First day—8:30 to 9:30

A. Review previous four-days training
B. Introduce new suggestions where girls have been weak

Second day

Let girls practice what they have learned

Third day—8:30 to 9:30

A. Have salesperson sell assistant buyer
B. Note—approach—knowledge of stock, force of selling arguments, etc.
C. Note condition of stock and interest of salesperson
D. Tell girl increased sales will be expected as she grows in the work; possibilities for her advancement in the department

In case of a big event such as an Auditorium Sale, March Sale, and etc., where the selling force of a department is tremendously increased for only a few days period, the above course would have to be boiled down and all essential points given in one or two lectures. As the sale wanes and the selling force decreases, the girls' ability would have to be judged by amounts sold.

Submitted, March 12, 1925.
(F. G. Nicholas.)

The completed training programs were turned over to the various training supervisors, each of whom is responsible for certain departments. These supervisors are now working with the assistants in refining and perfecting their programs.

A further follow-up is conducted by the merchandise managers who hold periodic dinner meetings with their buyers and assistants. The various training supervisors attend these meetings and the department

training forms an important part of the discussion.

JUDGING THE RESULTS

Although the full effect of the course and the follow-up has not been attained, certain results that can already be noted are:

1. Increased interest on the part of departments in training their salespeople. This is undoubtedly due to:

a. A definite program and schedule to follow.

b. Contacts with the Training Department, members of which are giving daily assistance with problems.

c. The feeling of a friendly yet thorough check-up on results.

The fact of increased interest can be substantiated by the increase in the number of calls upon the Training Department for assistance and conferences with assistant buyers who formerly took no interest in training

2. A decrease in the number of personal differences between salespeople and department executives as evidenced by the decrease of visits of dissatisfied employees to the Employment Bureau and Training Department.

3. Better selling service as indicated by a rise in the percentage of satisfactory shopping reports. (About two hundred fifty tests of selling service are made monthly by shoppers employed for the purpose.[3]) There is also a noticeable decrease in the number of complaints which may be due in part to department training.

The most important outcome of all is the establishment of contacts between the assistant buyers and the Training Department which has laid the foundation for further work.

(Manuscript received June 24, 1925.)

[3] *Service Shopping in Stores.* Julia Mockett. Journal of Personnel Research, January, 1925, Vol. 3, No. 9, pp. 339–346.

Bibliography on Psychological Tests and Other Objective Measures in Industrial Personnel

By Grace E. Manson, *University of Michigan*

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THIS bibliography has been assembled with the desire to be of service to executives interested in objective methods of vocational selection, as well as to university instructors of courses in applied psychology, and to other persons interested in vocational selection and allied fields. It is our hope that by bringing together references to the literature found in the scientific, business, and popular journals that this material may be made more readily accessible. The list of references is in no wise exhaustive, but does, we believe, include most of the representative articles found in the recent literature both here and abroad. References are made to only those authors who have used or discussed objective methods.[1]

We have not attempted to evaluate or summarize the various articles although there is undoubtedly a need for critical and annotated bibliographies. Arthur W. Kornhauser's critical bibliography published in the Psychological Bulletin in 1922 continues to be the only extensive critical bibliography in the American literature. Annotated bibliographies prepared by investigators in special fields such as

[1] The writer wishes to express her indebtedness to Mr. Roland C. McKee who has ably assisted in the detailed work of preparing this bibliography, especially in respect to articles by German investigators.

clerical tests, tests of factory operators, of salesmen, etc., would be of great value, especially to personnel directors and employment managers who may be considering the adoption of tests and other objective measures in their particular organizations.

The general scheme followed in this bibliography is as given above.

We have referred first to other bibliographies on vocational selection, or to other bibliographies which have included sections on objective methods of selection. Under Books we have listed those authors who have written books on vocational selection or who have chapters on the subject. In the latter cases, specific page references are given. The section headed "General Articles" includes those articles whose purpose it is to discuss the theories and principles underlying objective measurement, rather than to report on specific measures which they have used. Under the heading, "Traits and Abilities Desirable for Various Occupations," we have listed references to those authors who have used objective methods in the analysis of the traits and abilities desirable for various occupations. We have placed in parentheses the occupation for which the analysis was made in those cases where it is not indicated in the title.

From section 5 on, classification is made on the basis of the objective method used. Six subdivisions have been made: (a) tests including intelligence tests, aptitude tests, and tests of special abilities, (b) trade tests, (c) personal history records, (d) rating scales (e) interest analyses, and (f) photographs.

References have been grouped according to the occupation in which the test has been used. More specific information concerning the kind of work than is contained in the heading is given in parentheses. A special section has been given over to "Trade Tests," because a number of articles have been written on trade tests in the sense in which the term was used in the army; that is, a test of acquired skill or knowledge which will discriminate between novices, apprentices, journeymen and experts in a certain line of work requiring a long period of training.

Under "Personal History Records," we have placed references which deal with objective studies of the items found on personal history records or application blanks. Such articles treat of the relationship existing between age, education, previous experience, etc., and success in the occupation. Frequently, scoring methods similar to those used for tests are used for evaluating personal history records.

Rating scales have been used in a great many organizations, since the wide-spread use of rating scales in the army. We have not differentiated between the various rating techniques as graphic, man-to-man, order of merit, etc., but have given the occupation for which the scale was devised.

The interest analysis blank is a less familiar device. It is a method which aims to determine aptitude for an occupation and probability of success in the occupation through an analysis of the subject's interests and preferences.

Not a great deal of work has been done on the evaluation of photographs in vocational selection, but what has

been done seems to point to the fact that applicants for positions can not be chosen successfully from their photographs.

Since it is often desirable later in the bibliography to use abbreviations of periodical titles, the abbreviations are listed here as well as the complete titles.

The bibliography follows:

PERIODICALS

1. ———. Administration (mo.) Ronald Press, 20 Vesey St., New York. $5.00.
2. Advertising & Selling. Advertising and Selling (mo.) Grand Central Terminal, New York. $3.00.
3. Amer. Industries. American Industries (mo.) National Manufacturing Co., 30 Church St., New York. $1.00.
4. Amer. J. Nursing. American Journal of Nursing (mo.) 45 S. Union St., Rochester, N. Y. $2.00.
5. Amer. Mag. American Magazine (mo.) Crowell Publishing Co., Springfield, Ohio. $2.50.
6. Amer. Management Rev. American Management Review (mo.) American Management Association, 20 Vesey St., New York. $5.00.
7. Amer. School Bd. Jour. American School Board Journal (mo.) Wm. G. Bruce, Milwaukee, Wis. $3.00.
8. Amer. Shorthand Teacher. American Shorthand Teacher (mo.) Gregg Publishing Co., Chicago, Ill.
9. Ann. Amer. Acad. Annals of the American Academy of Political and Social Science (Bi. mo.) Rumford Building, Concord, N. H. $6.00.
10. Ann. I. Or. Pr. Annals de l'Institut d'Orientació Professional. Institut d'Orientació Professional. Sant Honorat, 5, Barcelona, Spain.
11. Arch. de Psychol. Archives de Psychologie. Librarie Kundig, Genève, Switzerland.
12. Arch. ital psicol. Archives italiano di psicologia (Irreg.) Laboratorio di psicologia sperimentale dell' Università, Torino, Italy.
13. Arch. Psychol. Archives of Psychology (Irreg.) Archives of Psychology, Substation 84, New York.
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15. Beiheft zur Zsch. f. Angew. Psychol. Beiheft zür Zeitschrift für Angewandte Psychologie (Irreg.) J. A. Barth, Leipzig, Germany.
16. ———. Betrieb. Julius Springer, Berlin, Germany.
17. Brit. J. Psychol. (Gen. Sect.) British Journal of Psychology. (General Section.) (q.) Cambridge University Press, Fetterlane, London, E.C. 4, Univ. of Chicago Press, Chicago, Ill.
18. Bull. Bur. Person. Res. Bulletin of Personnel Research. Bulletin Bureau of Personnel Research, Carnegie Institute of Technology, Pittsburgh, Pa.
19. Bull. Nat. Res. Council. Bulletin of the National Research Council (Irreg.) National Research Council of the National Academy of Sciences, Washington, D. C. $5.00.
20. Bull. Phoenix Mut. Life Ins. Co. Bulletin of the Phoenix Mutual Life Insurance Co. (Irreg.) Phoenix Mutual Life Insurance Co., Hartford, Conn.
21. Bull. Taylor Soc. Bulletin of the Taylor Society (bi. mo.) 29 W. 39th St., New York. $3.00.
22. Bull. U. S. Fed. Bd. for Voc. Educ. Bulletin of the United States Federal Board for Vocational Education (irreg.) Washington, D. C.
23. Bur. of Business Guid. La Salle Ext. U. Bureau of Business Guidance. La Salle Extension University, Chicago, Ill.
24. Bur. of Educ. Bureau of Education. Dept. of Interior, Washington, D. C.
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Personnel Research Federation

Founded 1921, Incorporated 1925

Annual Business Meeting, October 16, 1925

PERSONNEL Research Federation, Inc., held its first annual corporate meeting and a meeting of its Administrative Board on October 16, 1925, at the headquarters of the Federation, 40 West Fortieth Street, New York.

Reports by officers, staff and corporate members were presented and will be published in later issues of the JOURNAL OF PERSONNEL RESEARCH. The budget and program of work for the coming year were adopted.

Four new organizations

Yale University, Department of Administrative Engineering; Massachusetts Institute of Technology, Division of Industrial Coöperation and Research; University of Cincinnati, School of Household Administration; and the Federal Board for Vocational Education.

The following members were elected to constitute the ADMINISTRATIVE BOARD:

ONE-YEAR TERM

Corporate Members

ETHELBERT STEWART, U. S. Bureau of Labor Statistics
MRS. M. H. S. HAYES, Vocational Service for Juniors

Member at Large

HUGH FRAYNE, American Federation of Labor

TWO-YEAR TERM

Corporate Members

FRANKWOOD E. WILLIAMS, National Committee for Mental Hygiene
HOWARD COONLEY, Walworth Company

Member at Large

ROBERT I. REES, American Telephone and Telegraph Company

THREE-YEAR TERM

Corporate Members

EMMA P. HIRTH, Bureau of Vocational Information
JOSEPH H. WILLITS, University of Pennsylvania

Member at Large

C. R. MANN, American Council on Education

OFFICERS

At the meeting of the new Administrative Board the present officers were re-elected for the coming year:

President

HOWARD COONLEY, Walworth Company, Boston

Vice-Presidents

ALFRED D. FLINN, Engineering Foundation, New York
WILLIAM GREEN, American Federation of Labor, Washington, D. C.
CATOR WOOLFORD, Retail Credit Company, Atlanta

Secretary

ROBERT I. REES, American Telephone and Telegraph Company, New York

Treasurer

FRANCIS H. SISSON, Guaranty Trust Company, New York

Assistant Treasurer

WELCH WALKER, Guaranty Trust Company, New York

STAFF

Director, W. V. BINGHAM
Field Representative, P. S. ACHILLES
Research Assistant, MAX FREYD
Librarian, ISABEL DAVIDSON KNOTE

EDITORIAL BOARD

Journal of Personnel Research

W. V. BINGHAM, *Editor*, 40 West Fortieth Street, New York
C. S. YOAKUM, *Managing Editor*, University of Michigan
L. L. THURSTONE, *Associate Editor*, University of Chicago
A. D. FLINN, Engineering Foundation
ALICE HAMILTON, Harvard Medical School
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L. M. TERMAN, Stanford University
MARY VAN KLEECK, Russell Sage Foundation
J. H. WILLITS, University of Pennsylvania
FRANKWOOD E. WILLIAMS, National Committee for Mental Hygiene
MATTHEW WOLL, American Federation of Labor

MEMBERS

Fifteen members at large were admitted to the Federation, bringing the total membership at present to 60 members at large and 28 corporate members (representatives of federated organizations)—a total of 88.

The following is a list of the Federated Organizations with their representatives:

National Research Council, *R. S. Woodworth*
Engineering Foundation, *Alfred D. Flinn*
American Federation of Labor, *Frank Morrison*
National Committee for Mental Hygiene, *Frankwood E. Williams*
Bureau of Vocational Information, *Emma P. Hirth*
Vocational Service for Juniors, *Mary H. S. Hayes*
Bryn Mawr College, Carola Woerishoffer Department of Social Research, *Dorothy Sells*
Carnegie Institute of Technology, *Fred J. Hartman*
Dartmouth College, *Harry R. Wellman*
Harvard University, Bureau of Vocational Guidance, *John M. Brewer*
Harvard University, Graduate School of Business, *Wallace B. Donham*
Massachusetts Institute of Technology, Division of Industrial Cooperation and Research, *Kenneth Reid*
Northwestern University, *Walter Dill Scott*
University of Chicago, School of Commerce and Administration, *W. H. Spencer*
University of Cincinnati, School of Household Administration, *Elizabeth Dyer*
University of Michigan, School of Business Administration, *C. S. Yoakum*
University of North Carolina, *Francis F. Bradshaw*
University of Pennsylvania, Wharton School of Commerce and Finance, *Joseph H. Willits*
University of Pittsburgh, Research Bureau for Retail Training, *W. W. Charters*
Yale University, Department of Administrative Engineering, *Hudson B. Hastings*
U. S. Bureau of Labor Statistics, *Ethelbert Stewart*
U. S. Bureau of Mines, *Thomas T. Read*
U. S. Public Health Service, *L. R. Thompson*
U. S. Civil Service Commission, *L. J. O'Rourke*
Federal Board for Vocational Education, *J. C. Wright*
American Telephone and Telegraph Company, *E. K. Hall*
Walworth Company, *Howard Coonley*
Western Electric Company, *J. W. Deitz*

PROGRAM OF WORK

The work of Personnel Research Federation as outlined by the Director falls under four headings: Information Service, Promotion, Planning and Conduct of Research.

Information Service

1. Publication of the JOURNAL OF PERSONNEL RESEARCH as the official organ of the Personnel Research Federation and as a clearing house for results of investigations.

2. Preparation of card index of sources of information about personnel research. Exchange among members of the Federation of available research information, bibliographies, forms and other aids.

3. Discovery and collection of unpublished reports and notes of research on questions of industrial fatigue and industrial hygiene, including mental hygiene and the effects of rest pauses; selection and development of executives; hiring, placement and training of workers; industrial relations including shop committee plans and other provision for cooperation of workers in management; methods of wage payment; nonfinancial incentives and rewards; vacations with pay; job analyses and personnel specifications; personnel records and forms; rating employees; methods of personnel administration, vocational guidance and placement in colleges and schools; and other live topics of personnel research on which data are often buried in the files of business concerns, trade associations, labor organizations, government bureaus and university departments.

4. Re-writing the results of research now buried in technical scientific journals and reports, to make them available for workers, business men and general readers.

5. Preparation of a manual of procedure or guide for the research worker.

Promotion

6. Promotion of interest in the purposes of the Federation through group conferences, occasional articles in the public press, service bulletins, addresses, attendance at meetings, correspondence and personal interviews. Securing support of business houses and foundations for specific projects.

Planning

7. Inventory of current researches, research facilities and available workers. Survey of outstanding problems, their relative importance, feasibility and likelihood of commanding support. Planning in detail for selected projects involving coöperative effort.

8. Helping member organizations to further their research by furnishing the counsel of the Staff and Technical Advisers.

Conduct of research

9. Investigations by the staff, as opportunity presents, of such problems as:

Selection and development of supervisors and minor executives.

Relation of general ability to stability of employment.

Occupational opportunities.

Personnel Research Federation, Inc.

Organized March 15, 1921. Incorporated March 16, 1925, in New York

Constitution

Revised and Re-Adopted March 27, 1925

ARTICLE I

Name and Corporate Seal

The name of this corporation shall be: *Personnel Research Federation, Inc.*

The corporation shall have a Corporate Seal which shall be in the form of a circle containing the name of the corporation and the words, "Membership Corporation, New York, 1925."

ARTICLE II

Object

The object of the Personnel Research Federation, Inc., is the furtherance of personnel research, to wit: the scientific study of man in relation to his occupations, and his education therefor; and the diffusion of knowledge concerning this relation.

As means to this end, but not exclusive of any other appropriate or conducive means, Personnel Research Federation, Inc., will be authorized to:

(*a*) Create a clearing house for information pertaining to personnel research;

(*b*) Formulate a comprehensive general plan by which research activities may be correlated and developed;

(*c*) Aid the organization and the conduct of selected researches;

(*d*) Publish and circulate information about personnel research.

The objects and purposes of this corporation are scientific and educational, and not for business or profit; and no officer, member or employee thereof shall receive or may be lawfully entitled to receive any pecuniary profit from the operations thereof, except a reasonable compensation for services in effecting one or more of its purposes.

ARTICLE III

Membership

Section 1. *Classes of Members.* Personnel Research Federation, Inc., shall be composed of the following classes of members:

1. *Corporate Members:* Individuals authorized to represent *approved organizations* as hereinafter prescribed.

2. *Members at Large:*

a. Sustaining Members: Individuals, including also representatives of organizations, who contribute substantial sums to the support of the Federation or of branches of its work.

b. Subscribing Members: Other individuals interested in personnel research and in sympathy with the purposes of the Federation.

Sec. 2. *Register of Approved Organizations.* Approved organizations shall be selected from such scientific, engineering, labor, management, employer, educational governmental and other associations, institutions, bureaus, departments or commissions, as are engaged in whole or in part in personnel research, including also business corporations having departments, bureaus, or officers interested in personnel research, and in sympathy with the purposes of the Federation.

The Administrative Board as constituted in the Certificate of Incorporation shall compile a Register of the organiza-

tions previously members of the organization heretofore existing and known as Personnel Research Federation, and shall also formulate and distribute suitable application blanks for other organizations desiring to be approved and added to the Register, and shall promptly consider and pass upon such applications as are received. The Register, so prepared, shall thereafter constitute the Register of Approved Organizations, except as duly modified; and the authorized representatives of these Approved Organizations shall constitute the corporate members of the corporation, as hereinafter prescribed (Sec. 4).

SEC. 3. *Modification of Register of Approved Organizations.* The Register of Approved Organizations shall be submitted for the action of each annual meeting of the corporation, and at such annual meeting the vote of two-thirds of the corporate members against any organization appearing on said Register, shall effect the removal of said organization from the Register of Approved Organizations.

Subject to the action of each annual meeting of the corporation, the Administrative Board shall from time to time revise the Register, acting upon such applications as may be presented for addition thereto, and removing such organizations as may resign, or be in default under the Constitution and By-Laws of the corporation; but no organization whose admission to the Register has been approved by the corporate members shall be removed without its own consent, except for cause.

SEC. 4. *Representation of Approved Organizations.* Each approved organization shall have the right to appoint one representative, who shall by virtue of such appointment thereupon become and be a corporate member of the corporation, for the period stipulated by the organization appointing him but not beyond the time during which the organization shall continue to be on the Register of Approved Organizations. Each organization shall also have the right to revoke any appointment made by it, and appoint a successor of its representative. All appointments, or revocations of appointments, of representatives to be corporate members shall be made in writing under the hand of a duly authorized officer or representative of the approved organization, and shall be filed with the Secretary of the corporation.

SEC. 5. *Voting.* Each corporate member shall have one vote at all meetings of the corporation, and such vote may be cast in person, or by proxy. Proxies as such shall exercise no other right of the corporate member than voting. The proxy shall not be used or counted of any corporate member who shall be personally in attendance at the meeting. Members at large shall not be entitled to vote at corporate meetings of the Corporation.

SEC. 6. *Election of Members at Large.* Election of Members at Large shall be by a three-fourths vote of those present at any regular meeting of the Administrative Board, subject to such rules and regulations as the Administrative Board may from time to time prescribe.

SEC. 7. *Suspension or Termination of Membership.* The Administrative Board shall have power to make provisions in the By-Laws, not inconsistent with the provisions of this Constitution, for the suspension of members or termination of their membership for default in the payment of dues or other default in the observance of the lawful requirements of the Constitution or By-laws, or for conduct detrimental to the interests or policies of the corporation, but no such by-laws shall have retroactive effect.

SEC. 8. *Privileges of Members.* All members shall be entitled to attend all meetings of the corporation; to receive the official organ of the corporation, the Journal of Personnel Research, so long as the same may be published by the corporation; and to enjoy such privileges as may be prescribed from time to time in the Constitution and By-Laws.

ARTICLE IV

DUES

SECTION 1. The dues of Corporate Members shall be $50 per annum payable as the By-Laws may provide. Total or partial exemption from payment of dues

may be granted, however, by three-fourths vote of the Administrative Board, to corporate members representing governmental organizations or other institutions of such character or in such situation that the payment of such dues would be illegal, unduly onerous, or for other substantial reason inadvisable.

SEC. 2. The dues of Subscribing Members shall be $8 per annum.

SEC. 3. The dues of Sustaining Members shall be at least $250 per annum.

ARTICLE V

ADMINISTRATION

SECTION 1. The corporation shall be governed by a Board of Directors to be known as the Administrative Board. This Board shall be elected at the annual meeting of the corporation and shall consist of nine members, at least six of whom shall be corporate members and three of whom may be either corporate members or members at large.

The term of each member of the Board of Directors shall be three years, but at the first annual meeting for the election of Directors, two corporate members shall be elected to serve for one year, two corporate members for a term of two years, and two corporate members for a term of three years; and one member of any class shall be elected for a term of one year, one for a term of two years, and one for term of three years; and at the annual meetings thereafter the offices terminating shall be filled by the election of Directors for the full term of three years.

Vacancies in the Administrative Board shall be filled until the next annual election by appointment of the Administrative Board, and at the annual meeting, vacancies shall be filled by election covering the unexpired portion of the term.

SEC. 2. The Administrative Board, shall, subject to this Constitution, be vested with the exercise of all powers of the corporation. It shall make provisions in by-laws for the general administration of the affairs and property of the corporation. It shall determine from time to time, in a general way, what work is to be undertaken on behalf of the corporation and shall set the limits for expenditures. It shall have power to accept or reject donations of funds.

SEC. 3. The Administrative Board shall designate an Executive Committee consisting of the President, who shall be Chairman, the Secretary *ex-officio*, and three members of the Board. The Executive Committee shall have all powers of the Administrative Board between meetings of the Board, provided actions of the Committee involving changes in policy or major expenditures are subject to telegraphic or letter referendum by the Administrative Board.

SEC. 4. Meetings of the Executive Committee shall be called by its Chairman upon request of the Director or of three members of the Committee.

ARTICLE VI

OFFICERS AND COMMITTEES

SECTION 1. The Officers of the Corporation shall be a President, three Vice Presidents, a Secretary, and a Treasurer, who shall be chosen annually by the Administrative Board, and who shall perform the usual duties of these officers and such other duties as may be assigned by the Board. These officers shall also be officers of the Board and may or may not be members thereof. If not members of the Board, officers shall have no vote in said Board. The Board may also appoint and at pleasure remove one or more Assistant Secretaries and Assistant Treasurers.

SEC. 2. The Administrative Board may authorize and discontinue from time to time such standing or special committees as it may deem advantageous for conducting activities of the corporation.

ARTICLE VII

EXECUTIVE STAFF

SECTION 1. The Executive Staff of the corporation shall consist of a Director and the necessary assistants. The Director

shall be appointed by the Administrative Board, and his assistants shall be engaged by the Director.

SEC. 2. The Director shall be *ex-officio* a member of the Administrative Board, without vote therein.

ARTICLE VIII

COUNCIL OF TECHNICAL ADVISERS

A Council of Technical Advisers is authorized, to consist of expert and professional persons competent in various fields, invited by the Administrative Board to give information and counsel on questions referred by the administrative officers or the Director. Technical advisers shall serve without fee. Their number and term of office shall be fixed by the Board.

ARTICLE IX

AMENDMENTS

This constitution may be amended at any meeting of the corporation by the affirmative vote of at least two-thirds of the total corporate membership, provided that written notice of such proposed amendment shall have been given by mail or otherwise to each corporate member at least thirty days in advance of the date of meeting.

By-Laws

ARTICLE I

MEMBERSHIP OBLIGATIONS

SECTION 1. Members are expected to conduct or encourage personnel research in their several fields in so far as may be practicable, to supply to the Federation for circulation among its members reports of researches conducted by them or by organizations which they represent, and to coöperate helpfully with other members of the Federation in giving information and counsel with respect to researches which may be in progress or proposed.

SEC. 2. Upon notification of its placement upon the Register of Approved Organizations, an organization shall be requested to nominate its representative and shall be responsible for payment of its representative's dues from the date of such notification.

SEC. 3. Any member may be suspended or expelled, and in like manner, any organization be suspended or removed from the Register of Approved Organizations, after written notice and due opportunity to reply, for actions seriously prejudicial to the welfare of the corporation, provided that not less than two-thirds of the corporate members vote affirmatively.

SEC. 4. Members shall automatically be dropped from the rolls of the Federation for failure to pay dues within six months after date upon which dues are payable.

SEC. 5. Any member suspended, expelled, or dropped from the rolls of the Federation may be reinstated, provided that all obligations of such member to the Federation be paid in full, and provided that not less than two-thirds of the corporate members vote affirmatively.

ARTICLE II

DUES

SECTION 1. Dues shall be due and payable annually in advance on October first to the Treasurer. First dues shall be due and payable upon the date of notification of an Approved Organization to nominate its representative, or in the case of Members at Large upon notification of election, and failure to pay such dues within ninety days after date of notification shall cause lapse of membership. Members admitted after six months of the fiscal year, beginning October first, shall have expired, shall pay only one-half of the annual dues for that year. Payments may be permitted in quarterly installments.

ARTICLE III

Meetings

Section 1. The annual meeting of the corporation for the election of Directors shall be held at the headquarters of the Federation on the second Saturday of October in each year and the annual meeting of the Administrative Board shall be held immediately thereafter, at which annual meeting of the Administrative Board the officers of the corporation for the ensuing year shall be elected. Notice need not be given of these stated meetings and failure to receive notice shall not invalidate the same; but the Secretary shall give such notice as may be directed in the By-Laws or by resolution of the Administrative Board. A special meeting of the Corporation may be called by resolution of the Administrative Board provided at least thirty days' notice of such meeting be given to the corporate members.

Sec. 2. Special meetings of the Administrative Board may be called by the President, or upon such dates as may be fixed by its resolutions, or upon the request of five members of the Administrative Board.

Sec. 3. One-third of the corporate members shall constitute a quorum at any meeting of the corporation. A majority of the members of the Administrative Board shall constitute a quorum of that body. A smaller number of either body may adjourn a meeting to any specified place and time.

ARTICLE IV

Committees

Section 1. Special committees for the study of any subject within the province of the corporation, or for other suitable purposes, may be authorized by the Administrative Board, which may also determine the manner of selection and appointment of such committees. Membership in these committees is not limited to members of the corporation. No committee shall be authorized to enter into contracts, or incur expenses chargeable against the corporation, except to the extent that may be specially and specifically authorized by the Administrative Board. All such committees may be discharged, enlarged or otherwise modified at the pleasure of the Administrative Board.

Sec. 2. A nominating committee of not less than three corporate members may be appointed by the President to nominate candidates for election as members of the Administrative Board, but voting shall not be restricted to the nominees of this committee.

Sec. 3. The President shall appoint annually an auditing committee of not less than three members of the Federation, which shall audit the accounts and financial transactions of the corporation for the current fiscal year and report such audit at the annual meeting of the corporation on the second Saturday of October in each year.

ARTICLE V

Duties of Officers

Section 1. The Director shall devote such portion of his time to the work of the Federation as may be covered by the terms of his engagement. He shall serve as the executive officer of the Federation and conduct the ordinary business of its office. Under the general authority of the Administrative Board, he shall promote the objects of the Federation as stated in the Constitution, and within authority granted from time to time by the Administrative Board, may initiate and carry out operations necessary or desirable therefor.

The Director shall have authority, subject to the general control of the Administrative Board, to determine the ways and means which he shall use in performing the work assigned to him, but shall not undertake or contract expenditures in excess of the funds provided in the Budget or by special appropriation.

The compensation of the Director shall be fixed by the Board. Within the Budget allotment, the Director may fix the compensations of his assistants.

Sec. 2. The Secretary shall keep a record of all proceedings of the Federation, its Administrative Board, and the Executive Committee. He shall send a copy of

the record of each meeting of the Federation to each corporate member.

Notices for general meetings of the Federation and for meetings of the Administrative Board shall be mailed by the Secretary not less than fifteen days in advance of date of meeting. Notices for meetings of the Executive Committee shall be given by mail or wire not less than twenty-four hours in advance of the time of meeting.

The Secretary shall notify each member of the amount of his dues for the ensuing year, at the time of giving notice of the annual meeting.

SEC. 3. The Treasurer shall receive and safely keep all moneys paid to him for dues or otherwise for the purposes of the corporation. He shall deposit the funds in the name of the Personnel Research Federation, Inc., in a bank acceptable to the Administrative Board. All checks drawn upon said funds, shall be signed by him or by the Assistant Treasurer.

Neither the Treasurer nor the Assistant Treasurer shall make payments except on vouchers approved by the Director, President, or Secretary of the corporation, which are in accordance with the annual Budget or other authorization of the Board. Each such voucher shall contain on its face a reference to the resolution of the Administrative Board, or other authority, pursuant to which it is to be paid, and a notation of the voucher number shall be made upon each check by which the sum authorized by said voucher is paid.

The Treasurer shall establish a petty cash fund for the Director, in an amount to be determined by the Administrative Board, and shall replenish it from time to time upon submission of proper vouchers.

The Assistant Treasurer shall perform such of the duties of the Treasurer as the Administrative Board may from time to time prescribe.

SEC. 4. Any officer of the corporation may be removed at any time by the affirmative vote of a majority of the Administrative Board.

SEC. 5. The Administrative Board may require the Director, or any officer in its discretion, to give to the corporation a bond, in such amount as may be required by the Administrative Board, with satisfactory sureties, for the faithful performance of the duties of his office, and for turning over to the order of the Administrative Board, or satisfactorily accounting for, all books, papers, vouchers, records, money or other property of whatever kind belonging to the corporation that may have been in his custody. The expense of such bond shall be a corporate charge.

ARTICLE VI

BUDGET

SECTION 1. The Director shall summit to the Administrative Board annually, not later than September first in each year, a tentative Budget of anticipated income and proposed expenditures for the year beginning October first next ensuing. This Budget shall contain separate provision for the executive staff, and for the necessary expenses of each officer.

The Administrative Board at its next meeting thereafter and not later than the second Saturday of October, shall consider this Budget and make such changes therein as it shall deem advisable, and shall then approve the same. The Budget so approved shall be submitted at the annual meeting of the corporation for discussion and recommendation. It shall then be upon the order of business for the first meeting of the Administrative Board immediately following the annual meeting of the corporation, at which meeting the the Administrative Board shall finally approve and adopt the Budget for the fiscal year commencing on the preceding October first.

SEC. 2. The Budget so adopted shall control the general financial operations of the corporation during the fiscal year for which it is adopted, subject to the direction and control of the Administrative Board; but no obligations in excess of the amounts provided for in the Budget shall be incurred or allowed except by affirmative vote of at least three-fourths of the Administrative Board.

ARTICLE VII

Admendments

Section 1. These By-Laws may be amended at any meeting of the Administrative Board by the affirmative vote of at least two-thirds of a quorum present at the meeting, provided that written notice of such proposed amendment shall have been given by mail or otherwise to each member of the Administrative Board at least three weeks in advance of the date of the meeting.

Book Reviews

THE CAUSES OF INDUSTRIAL UNREST

By John A. Fitch. New York: Harper and Bros., 1924. Pp. xiv + 424

REVIEWED BY C. S. YOAKUM

Those interested in human problems as they exhibit themselves in work and longings, will find this well written book packed full of thought. Mr. Fitch has shown unusual caution in stating the situations that picture industrial foment. This book, frankly a discussion of the unrest phases, attempts to set out occasions for the development of group dissatisfaction and suspicion, though the author argues that these are by no means all that happen. Many conciliatory situations may be found. He chooses to take the first group because they seem to have more influence "beyond the limits of the establishments actually involved." (P. xi.)

In view of this method of selection, the reader needs to exercise a caution and balance of his own. The theme is not intended to show the development of industrial relations, but is, rather, a direct attempt to uncover existing evils, and to picture vividly conditions that actually prevent the more rapid spread of intelligent handling of these human relations. The reader is bound to supply for himself the understanding that progress is being made, as it is not the purpose of this volume to give all data necessary for such a view.

The story is given in four divisions: unrest arising from economic conditions, unrest arising from the struggle, unrest and the government, and fundamental principles. Under the first division, hours of labor, the wage earner's living, his income, and unemployment are the topics considered. In the second division, the author attempts to interpret organized labor. Two chapters are given to a statement of methods used in active opposition to unions. In the foreword the author says, "I believe the basis of most of our social difficulties is not ill will, but ignorance." The theme of this division opens up an interesting speculation. The reviewer is constrained to the belief that neither of the terms of the disjunction offer a real cause. There is evidenced in the whole story a back wash of individual and group desires, coupled with the very human difficulties of getting what one wants, to set aside either ill will or ignorance as root causes of our social difficulties. There seems to be no royal road to any desired thing. But, however well we know this, we are often tempted to test it again. Imagine a group of individuals who have no bias, no particular habits, but still retain desire; out of such might come progress without conflict.

It is not our purpose to review this book in detail. It is well worth reading. No one in industry, executive, owner, or laborer, could fail to enjoy it. Furthermore, there are various biases enough to enable any reader to determine his own. Too few books of this sort are written, especially by writers conversant with enough facts.

After discussion of superficial causes, the author proposes three primary bases for industrial unrest. "One concerns the relative interest of employer and employee in the ultimate product due to their cooperation. Another is the tendency in

modern industry toward specialization, with its resultant monotony. A third is the definitely restricted status of the wage earner." At this point the reviewer may well acknowledge that ignorance is probably fundamental. Certainly these are not to be solved by conflict; rather by real and unbiased research.

THE INTELLECTUAL WORKER AND HIS WORK

By William Macdonald. New York: The Macmillan Company, 1924. Pp. 351

REVIEWED BY MARGARET M. ALLTUCKER

William Macdonald conceives labor as divided into two great classes: intellectual workers and manual workers. He defines the former as "all persons who are not capitalists or employers, or whose support is not derived from invested funds or the earnings of others; all whose work is not primarily manual, clerical, or routine; and all whose intellectual effort, whether narrow or extended, is not spent in the regular production of a material product upon whose quantity or regularity, with or without consideration of the time involved, compensation is primarily based."

The author states the purpose of the book as follows: "To examine the nature of intellectual workers as an element in the economic organization of modern society, to point out the conditions under which intellectual work as a whole is performed and the actual status of intellectual workers in the economic groups which they naturally form, and to consider the methods by which the social interests of intellectual workers may be conserved and their economic position improved."

From the standpoint of economic organization, it is the author's viewpoint that the "intellectual worker is a laborer. He is an artisan engaged in the production of things which possess economic or social value. . . . . "Fashion, prejudice, or adventitious favoritism are often important factors in the sale of intellectual products," hence the intellectual worker who lives by the rewards of his labor, is obliged to create something for which there is an economic demand.

The author points out that "Many intellectual workers, however, devote themselves to a particular task solely because of an inherent impulse to self-expression in that direction, irrespective of any wage reward that their work may bring. Hence arise the well-known economic phenomena of persistent under-payment of certain forms of intellectual work."

Mr. Macdonald illustrates the precarious livelihood of many intellectual workers by the artist, who is limited in the sale of his work to the extent to which society, through the education of mind and taste, becomes conscious of beauty, and desires beautiful things.

Financial hazards, misunderstanding, lack of appreciation of the general public, discouragements and the often limited opportunities for self-expression, as related to such intellectual workers as the dramatist, the actor, the teacher, the research worker, the physician, the lawyer, and the minister are painted in somber colors. To offset these Mr. Macdonald points out that intellectual work affords opportunity, as mechanical labor in general does not, for individual publicity and distinction, and the striking success of the small minority of workers throws a glamor everywhere over the class as a whole.

In discussing the administrative control of intellectual work, the author states: "Where such control actually exists, it is not only as a rule unnecessary but is likely also to be pernicious. . . . . The intellectual worker—if he is to contribute to society any values that are worth while, must be left a free man and a free citizen in everything that does not concern the routine of his labor.

"Intellectual work . . . . is always

seeking better forms or methods, better application of accepted principles in the making of its product; and the sum of these advances in unnumbered lines is social progress. . . . . It is necessary to the welfare of society, therefore, that the place of the intellectual worker should be clearly established and the indispensable character of his work generally recognized."

Macdonald's answer to the question, How can the intellectual group take its rightful place in present day industrial society, is *organization of intellectual workers into a professional union.* He would have all intellectual workers unite, for, according to him, the foundation of intellectual unionism is community of professional interest, not identity of professional performance. He argues further that every gain in professional solidarity will enhance the true dignity and the economic attractiveness of professional work and raise the quality of the intellectual product. He urges solidarity of intellectual workers even to the point of national federation and international organization for the defense and furtherance of intellectual interests as a whole and the expression of collective intellectual opinion.

Those not in harmony with labor unions would probably not sympathize with "intellectual unions," nevertheless they would probably admit that Macdonald makes at least a partial case for the need of some sort of united effort on the part of intellectual workers to improve their social and economic status. Too much emphasis, perhaps, is given to the obstacles which intellectual workers face and not enough to their rewards. The latter, compared with those received by manual laborers are in many instances greater if the plane of living is taken as the measure. Such questions as these also cross one's mind: Would a union of intellectual workers strike, and as a result withhold ideas that might make for human progress, while their members were trying to get the rest of society to appreciate what they had previously done or proposed to do? Isn't one of the chief joys of the intellectual worker, the giving to the world new ideas, and seeing those ideas take definite shape? One of his rewards is the joy of accomplishment.

Some would argue that the creative character of the work of intellectuals would itself work against the standardization which unionism often results in. Others would say that the years of obscurity, difficulty and lack of recognition that most young intellectual workers have to live through, offer opportunity for testing out their theories before they are generally accepted by society. And while truth may at first be rejected, even though it is crushed to earth it will rise again.

GENETIC STUDIES OF GENIUS. VOLUME I. MENTAL AND PHYSICAL TRAITS OF A THOUSAND GIFTED CHILDREN

By Lewis M. Terman and others. Stanford University Press, 1925. Pp. xv + 648

REVIEWED BY ARTHUR I. GATES

In this volume Terman and his assistants have reported their findings concerning the present status of one thousand intellectually gifted children; a study made possible by appropriations of the Commonwealth Fund and the Thomas Welton Stanford Fund. As a contribution to our knowledge concerning youthful genius, it is without a rival; as a contribution to the science of measurement of intellectual and moral traits in general, it possesses marked significance; as an example of the utilization of rigid and appropriate technique and of reserve and caution in interpretation, it is admirable. It is one of the most significant and useful books in the whole literature of mental measurement.

A gifted child is defined as one which

earns an I.Q. of 130 or above. A thousand such children in California were found and intensively studied. The following data in whole or part were gathered concerning these children: vital statistics, results of 37 anthropometric measurements; extensive histories of health, physical defects and habits from birth; results of medical and physical examinations by physicians; school progress and educational history; results of an elaborate series of tests of scholastic attainments; preferences for scholastic, occupational and other activities; extensive data on play interests, reading interests, intellectual, social and activity interests; objective tests of character and personality traits; and ratings upon twenty-five physical, mental, social and moral traits. Many of the tests, questionnaires and rating scales were devised specially for the purpose at hand. The examination of these children, together with the control group of unselected cases, was probably more extensive and objective than those usually conducted in the best equipped psychological clinics.

The characteristics of the intellectually gifted children appear in the comparison with unselected children. The result is a complete demolition of time worn misconceptions of the constitution of budding genius. The intellectually superior child is not typically small, frail,unstable emotionally, unmoral or immoral, selfish, nonsocial, introspective, uninterested in normal games and sports, snobbish, unrespected by others of similar age, etc. On the contrary, he is a trifle superior in size and other physical traits and in robustness, somewhat more superior in moral and social traits and in general nervous stability, quite normal in play and in vocational, social and other interests. Such are the results of comparisons of the averages of the two groups which nevertheless overlap greatly. Intellectual superiority is by no means incompatible with physical, moral and social deficiencies, but the latter are more frequent among unselected children. "The gifted are not free from faults, and at least one out of every five has more of them than the average child of the general population." The deficiencies so often and copiously attributed to the gifted are really more prevalent among those less well endowed intellectually.

Aside from the wealth of information concerning highly intelligent children, the study has produced other materials of great value. It has yielded a large number of new instruments—tests, rating scales, questionnaires—some of them ingenious, and most of them comprehensive and well conceived, and more objective than others previously available for appraising status in fields where the need has been specially acute. The investigation produced, moreover, scores upon these instruments secured by a large group of representative children. As a standard of comparison the norms thus obtained are unequalled. The study yielded, also, many valuable items concerning experimental and statistical technique. Finally, the report includes considerable data which contribute to the solution of many general problems such as the differences in variability of the sexes in intellectual and other traits, differences due to race, immediate ancestry and environmental factors. If the projected follow-up studies are completed—it will be little less than a calamity to the science of mental measurement if they are not—the contributing influences of heredity and environment in determining intellectual status and achievement may be estimated more closely than is now possible.

American education, philanthropy and society in general has given scant attention to the conservation and equipment of the exceptionally able children on the theory that they are able to take care of themselves. Terman has, for many years, most actively and vigorously expounded the economic and social losses which such a policy entails. He has now produced a most substantial body of scientific evidence upon which to base the claim that the intellectually gifted merit special educational treatment and that society can scarcely afford to permit them to go without it. The present volume is an ample demonstration of the rare fitness of its author for further work in this field.

Abstracts

Analyzing Personality. Part I. GEORGE C. BRANDENBURG. Journal of Applied Psychology, June, 1925, Vol. 9, No. 2, pp. 139–155.

A report of the first two of a series of experimental studies of personality, made in an attempt to answer such questions as, "What are the chances that the enthusiastic and optimistic man will be sincere, sympathetic or broadminded? How far may we expect to find the individual with an outstanding personality possessing such traits as common sense, self-reliance, and originality? To what extent is a student's grade determined by his personality? How far is a man's income dependent upon his personality?"

Discusses the meaning of the term personality, and the meaning and interrelations of personality and character.

The first study was an analysis of interratings among a class of students. Twenty-nine senior engineering students in a vocational psychology class at Purdue University rated each other with respect to twenty-three personal and character traits, selected by the class from a list of some one hundred-fifty different traits assembled from various rating and personnel systems. These were selected as being the most important ones for a good personality. Estimates made by the students on the rating sheets were summarized so that each student received a final ranking in the group in each trait. Table I shows the intercorrelation among the twenty-three personal traits as well as the correlation between each and the total personality as indicated by the final rank of the individual in the various qualities.

Concludes from this table that excellence of one's personality is dependent on the various traits roughly in the degree indicated by the following classification:

Largely by:
- Accuracy in work
- Enthusiasm
- Aggressiveness
- Self-reliance
- Memory
- Popularity
- Motor ability
- Tact
- General ability

Somewhat by:
- Reliability
- Coöperation
- Reasoning ability
- General information
- Originality
- Sympathy
- Speed in work
- Social and civic interest
- Address
- Sincerity
- Industry

Slightly by:
- Neatness
- Appreciation of humor
- Moral habits

In a similar manner the relationship of any given trait to each of the others is shown. Several minor facts that appear in the table are discussed. A check was made on this study by having each of a group of forty seniors submit a list of ten qualities which he found most attractive and agreeable in his instructors. A few days later he was asked to submit another list containing the ten most disagreeable qualities. Results show the same general arrangement of qualities with reference to the popularity of an instructor as does Table I with relation to popularity in general.

It is apparent from both sets of data that such qualities as intellectuality, moral habits, industry and neatness have little

to do with one's popularity, while consideration for and sympathy with others, courtesy, a coöperative spirit, enthusiasm, cheerfulness, fairness and reliability are the traits which are most likely to make one a favorite with associates.

A year later a second study was made using only nine traits somewhat more inclusive than the former. Results show a general trend very similar to the previous study.

In order to determine the relation of personality to intelligence each of the two groups of students were given the Army Alpha test, and the results correlated with the total personality ratings. Coefficients were: Group I, 0.51, Group II, 0.34.

With reference to the relationship of personality and school grades, the various traits for Group I were correlated with grades and it is shown that the instructor is not very susceptible in his grading to the diplomatic endeavors of students. Reasoning ability, self-reliance, an industrious spirit, etc., are essential to the securing of good grades.

The article is to be continued and will give the progress that has been made in the direction of studying the performance of men in business and professional life.

The Clinical Viewpoint in Vocational Selection. MORRIS S. VITELES. Journal of Applied Psychology, June, 1925, Vol. 9, No. 2, pp. 131–138.

Deplores the great reliance so often placed on results secured from purely statistical interpretation of objective test scores by some clerk of the employment office, and urges the adoption of a clinical viewpoint in testing applicants for jobs so that interpretation shall be done by one trained in psychological theory and knowledge of human behavior rather than by a technical assistant.

So often when some psychological tests are desired to help solve a problem in industry it is demanded that they be administered and interpreted by a clerk in the employment office. This limitation has in reality been established by vocational psychologists themselves, not only in technical articles but time and again in advertising announcements.

Insistence on this point of view is based upon three assumptions:

1. Statistical. Test scores are considered the known variable from which vocational success may be predicted, based on known relationships of test scores with vocational success.

2. Industry is not yet ready to pay the cost of a more refined and detailed method.

3. The relative unimportance of the individual worker in industry. This is not so often recognized by workers in this field.

Challenges the first by stating that there is always a qualitative aspect of mental analysis along with quantitative measurements. A clinical psychologist is in much the same position as a physician making a diagnosis—he receives reports and tests from assistants but reserves interpretation for himself. The statistical point of view has dominated but in the cause of greater scientific accuracy in vocational selection it must be supplemented by a clinical point of view. The second assumption is, perhaps, justified by fact, but industry must be educated to the value of careful work in the case of the jobs which cannot be filled by statistical interpretation of results alone. And thirdly, a selective process which fails to give adequate consideration to the well-being and interest of the individual is, in comparison to the European viewpoint, shamefully behind.

Discusses a reconsideration of the place of the psychologist in industry. The statistical viewpoint makes place for a "psychotechnician," a worker with a minimum training in psychology, and a maximum training in statistics. He understands tests, but need know nothing at all of clinical observation and interpretation of performance. If the clinical point of view is to affect vocational selection he must be a psychologist, trained in psychological theory and method as well as in statistics, and he must function in the examination of applicants, applying his experience to the analysis of performance and thus aiding in deciding whether an applicant should be employed.

Occupational Material Needed by the Teachers and Use to be Made of It. CLEO MURTLAND. Vocational Guidance Magazine, May, 1925, Vol. 3, No. 8, pp. 262–268.

Gives an outline list of the occupational source material for teachers' and pupils' use, and discusses the most practicable plans to make it available for effective and satisfactory counseling.

Considers the use of occupational material from the standpoint of subject matter, and from the standpoint of the use pupils will make of it. Applications of occupational materials are needed in every situation, but not all the material may be used with any one group or individual, and the same method will not apply equally well in all instances. What is used and the way it is used must be determined by the pupils' interests and abilities, their potentialities and their immediate and future needs. Discusses examples of several different cases.

Urges that occupational study must be made a continuous process, and gives some suggestions to induce teachers to keep up-to-date with progress and change in industrial and commercial life so that occupational instruction will be satisfactory.

The Hosiery Industry. RUTH J. WOODRUFF. The White-Williams Foundation, Bulletin Series No. 5, April, 1925, pp. 45.

Presents a study of the hosiery industry and analyzes hosiery occupations, in order, (1) to aid junior workers entering textile employment, (2) to be of service to placement workers, (3) to assist those who prepare courses of study in textiles.

Part I outlines the nature and importance of hosiery manufacture, including such topics as, history of knitting, allied industries, importance of the industry in Philadelphia, capitalization, etc. Part II describes opportunities for employment and instruction, and Part III discusses working conditions, wages, advantages and disadvantages of hosiery occupations, trade conditions, etc. Part IV gives job analyses for each of the principal occupations in the making of hosiery, the topics considered for each being, (1) tasks, materials and equipment, (2) output, (3) skill and ability required, (4) strain and hazard.

News Notes

PERSONNEL RESEARCH FEDERATION

Activities of Member Organizations

Under this caption we shall print from time to time brief statements from corporate members of Personnel Research Federation. Researches within the field of personnel, published within the year, will be listed and attention called to investigations in progress, or completed but not yet published. Mention will also be made of activities likely to be of interest to members, having to do with placement, guidance, training, industrial relations, fatigue, hygiene, safety, and other phases of the broad subject of "the study of man in relation to his occupations and his education therefor." Suggestions regarding investigations which are needed but not as yet undertaken, and requests for collaboration, may also appear in these news notes of activities of federated agencies.

The first member organizations to report in this way are the National Research Council, the Engineering Foundation, the American Federation of Labor and the Harvard Bureau of Vocational Guidance.

National Research Council

Professor R. S. Woodworth, Chairman of the Division of Anthropology and Psychology of the National Research Council during the year 1924–25 and its representative in Personnel Research Federation, reports the following personnel enterprises now being carried on under the Council's auspices:

1. A Committee on Personnel Research, under the Division of Anthropology and Psychology, is engaged at present chiefly in the preparation and evaluation of tests for entering college Freshmen. These tests are published and distributed by the American Council on Education of Washington, D.C. Many thousands of the first edition of them were used in colleges throughout the country last fall, and a second edition is now being distributed for similar use. These tests represent a coöperative enterprise of psychologists in several colleges who have been engaged in this work for a number of years, and whose efforts are being pooled through the medium of this Committee. A grant from the Commonwealth Fund has made possible statistical treatment and evaluation of the returns from last year's tests.

2. A Committee on College Student Personnel, with Dean Hawkes of Columbia as Chairman, has developed plans for intercollegiate coöperation in studies of the employment situation as it concerns college graduates, and vocational and educational advice to students.

3. Several of the research projects being carried on by the Committee on Scientific Study of Human Migrations, are personnel studies in effect, notably Brigham's effort at internationalizing of intelligence tests, Elliott and Paterson's study of tests for manual ability, and Yoakum's study of personality traits. These studies have been going on for two years, and it is expected that definite results will soon be forthcoming.

4. The National Intelligence Tests continue to be much used, and a second form of the tests is now about ready for distribution.

5. The Committee on the Psychology of the Highway has a subcommittee on Tests for Drivers, which is making considerable progress in developing test methods for the selection of taxicab drivers, and also for the licensing of drivers by public authorities.

6. The National Research Council is represented on the Advisory Board of the Bureau of Public Personnel Administration. Two sorts of studies are prosecuted by this

Bureau: the preparation of standardized tests for various classes of positions in the public service (state and municipal), and the examination and evaluation of classification systems, compensation systems, rating systems, systems of records, and other elements of personnel administration, especially as they concern civil service authorities.

Engineering Foundation

As Secretary, and later as Vice-president of Personnel Research Federation, Alfred D. Flinn, Director of Engineering Foundation, has personally been largely instrumental in the Federation's successful development and progress. He reports for Engineering Foundation that the interest of engineers in personnel research is being furthered through the printing of items concerning activities of Personnel Research Federation in the publications of the American Societies of Civil, Mining and Metallurgical, Mechanical, and Electrical Engineers.

American Federation of Labor

For the American Federation of Labor, its Secretary, Frank Morrison, reports informally as follows:

"As you know, the Federation consists of one hundred and eight national and international organizations. We have not arranged at the present time for regular channels for receiving information of research undertakings inaugurated by these different organizations. The resources of our Federation have not permitted us to make provision for a research department as yet.

"Such inquiries as we have conducted have been generally for the purpose of dealing with a specific problem and not many of these have been in the field of personnel relations. However, some of our assistants in the office have, in addition to their other work, been trying to get together data on a few specific subjects. Among them are labor banks, company unions, employee insurance, investments for workers. We have, of course, been interested in establishing coöperative relations between employers and employees. Recently we published a pamphlet on 'Union-Management Coöperation.'

"Our A. F. of L. Committee on Education has been gathering information on apprentice training by our various locals, but has not as yet got together a complete file of material. This work will be continued. A number of our unions are interested in industrial hygiene and we have been giving some thought as to how to promote better health conditions for our workers. We would be glad of all possible assistance along this line.

"As I am writing this letter only a day before going down to Atlantic City to attend our annual convention you can well understand that I have not the time for detailed memorandum now. However, I am interested in the work of the Federation and hope to give substantial coöperative service."

Harvard University Bureau of Vocational Guidance of the Graduate School of Education

Dr. John M. Brewer, Director of the Bureau, writes that during the past college year a group of advanced students at the Graduate School of Education made a collection of cases in educational and vocational guidance. About 150 cases were collected, written up, and furnished with questions for discussion, and to this collection have been added an introduction on the use of the case method and certain other matters useful for class discussions. This book is now in the press with Ginn and Company.

During the year Dr. Lewis A. Maverick completed a study entitled "The Vocational Guidance of College Students." Dr. Henry J. Doermann completed his study "The Orientation of the College Freshman." And Dr. William T. Hodges completed "Student Accounting in Six Virginia Colleges." As yet no provision has been made for the publication of these dissertations.

INDUSTRIAL HEALTH CONSERVATION

The following statement regarding the movement for conserving the health of industrial workers was prepared by Helena

Lorenz Williams of the National Tuberculosis Association.

Tuberculosis in industry is decreasing. The death rate during the past 20 years from this disease for the entire country has been reduced by one-half. A part of this gain at least, may fairly be attributed to the sunlight factories, exhaust fans, dust-protecting masks and other health measures, which have become common-places in industry. Yet physicians and health workers still urge employers to install further protecting measures for working men and women. And many employers are questioning whether the expense of such equipment is really justified as a sound business investment.

It requires careful consideration of the studies which industrial physicians and life insurance company statisticians have made of tuberculosis incidence, to understand the uses of what is known as "industrial medicine." The Metropolitan Life Insurance Company, for example, has found that more men than women die of tuberculosis after the age of 25. They infer from this that the higher death rate for men is due to industrial strain, as after the age of 25, women for the most part are employed in the more sheltered occupations of the home. To substantiate this, they point to the figures of the war when large numbers of women entered the industrial field and the tuberculosis rate among them rose suddenly and stayed up until the wartime occupations were discontinued. This would seem to indicate that the wear and tear of daily industrial labor constitutes a strain hazardous to health.

The labor turnover and loss of time through illness still create a considerable loss to most employers of labor. To prevent this loss, and experts maintain that it is preventable, large industrial plants such as the New York Telephone Company, Metropolitan Life Insurance Company and the Dennison Manufacturing Company, have installed departments of preventive medicine for their workers. In these all sorts of diseases are diagnosed and treated, their greatest efforts, however, being sometimes centered on tuberculosis prevention. This is thoroughly logical, for wholesome food, fresh air, exercise and sufficient rest, still the most reliable preventives as well as treatment for tuberculosis, also build up the physical resistance so that it can throw off almost any other kind of germ.

Most to be reckoned with as hazards to the health of workmen are the dust hazard, impure air and over-fatigue. The problem of undernourishment, too, is a serious one. To illustrate the latter, it was observed in the plant of Montgomery Ward and Company that a number of girls fainted every day, thereby causing a considerable loss of time. By making a chart, the medical director discovered that the amount of the girls' output was upgrade for the first few hours of the day when it reached its peak, and that from then on it receded until the noon hour. After luncheon there was another rise, although it never reached the mid-morning peak, and after 3:00 p.m. the output began to fall with increasing rapidity until closing time. The theory of the medical doctor was that the slump might be due to insufficient feeding. The girls employed in this plant often travel far to work, they must be at their desks at 8:00 o'clock and, consequently, it was believed that they gave but little attention to their breakfasts. About 600 girls were put on a feeding of malted milk. All who seemed to need it were given a 12-ounce glass of double strength at 10:30 in the morning and again at 3:00 in the afternoon. The "faints stopped as if a miracle had been performed." The least gain in weight among the "patients" was 10 and the most 28 pounds.

Such an experience proves that the physical appraisal of working men and women gives the employer important knowledge of the strength of his force. It also helps him to correct easily remedied defects. An example of the latter occurred in a rubber footwear factory where, to the great annoyance of the manufacturer, imperfect work was going out to the trade. The eyesight of the inspecting force was checked up. It revealed the astonishing fact that 20 per cent of the group had such defective vision that they were useless in this particular work. After the proper corrective measures had been made, the quality of that firm's

product was quickly restored to its old level. A large shoe manufacturing company in the Middle West introduced a medical service into its plant of 2000 employees. Within one year 28 active cases of tuberculosis including the works manager had been discovered and removed for proper treatment.

Industrial health work is being recognized more and more as a paying business investment. According to Frank L. Rector, M.D., Secretary, Conference Board of Physicians in Industry, New York City, "The gains in improved morale and continuity of employment, to say nothing of the humanitarian questions involved, make it a profitable investment."

It is one of the aims of the National Tuberculosis Association and its affiliated organizations to educate working men and women in the rules of healthful living, thereby making them not only happier but better producers. In order to further this campaign of education, the annual sale of Christmas seals is held throughout the country in December.

YEAR'S GAINS IN LABOR LAWS TO PROTECT HEALTH AND SAFETY

Laws enacted in more than a score of states in 1925 to protect the safety, health and efficiency of labor include important improvements in workmen's accident compensation legislation, in safeguarding coal mines against coal dust explosions, and in relief of old age dependency, according to an annual summary issued by the American Association for Labor Legislation.

According to John B. Andrews, secretary of the association, "This year's grist of protective labor laws is mainly the improvement of existing legislation in the direction of greater liberality and uniformity rather than the adoption of new laws. Arizona replaced her old compensation law with a new and excellent act which, however, will not go into effect unless ratified in a popular referendum. Missouri enacted a compensation law but a powerful element in the labor movement has held up an otherwise liberal act by invoking a referendum to be held next year, for the publicly announced reason that it did not provide for insurance in an exclusive state fund. Many states, particularly New York, Illinois and New Jersey, strengthened their compensation laws. Three states provided for rock dusting coal mines to prevent disasters due to coal dust explosions. Wisconsin adopted an old age pension law and Nevada replaced her earlier act with a new one, while in California the governor vetoed an old age pension bill that had passed the legislature. Six additional states came into line for federal-state coöperation in rehabilitation of industrial cripples and in maternity care."

Social insurance

The enactment of workmen's compensation laws in 1925 by Arizona and Missouri, if ratified by referendum vote, will leave only five states and the District of Columbia remaining without compensation laws, according to the Association's summary. The Fitzgerald bill to extend this protection to private employees in the District is still pending. New Jersey reduced the "waiting period," after an injury before payment begins, to seven days, making a total of thirty-seven compensation acts which conform to the standard of the Association for Labor Legislation for greater uniformity in state laws. New York provided that compensation awards bear interest from thirty days after they are made until paid, in order to prevent hardships due to delayed payments, and voted increased appropriations to secure more effective administration of the law. Illinois extended the coverage of her compensation act and increased the benefits in certain cases. Compensation acts were amended in West Virginia, Colorado, Connecticut, Minnesota, Montana, Ohio, Oregon, Illinois, Utah, Iowa, Vermont, Idaho, Maine, and Indiana, and extensive administrative changes were made in California, Nevada and North Dakota.

Vocational rehabilitation

Colorado, New Hampshire and Oklahoma accepted the provisions of the federal act for rehabilitation of industrial cripples, making a total of forty-one states that have taken this action for federal-

state coöperation in restoring maimed workers to useful, self-supporting jobs. New York broadened her provisions for maintaining needy cripples while being rehabilitated.

Coal mine safety

Pennsylvania, West Virginia and Wyoming provided for sprinkling bituminous mines with rock dust to prevent coal dust explosions and otherwise strengthened their regulations for coal mine safety. The important rock dusting safeguard, which was adopted by Utah in 1924, aims to do away with fatal disasters. Congress finally authorized the printing of the report of the late United States Coal Commission which will make important facts on mine safety available to the public.

Old age dependency

In addition to the adoption of old age pension legislation in Wisconsin and Nevada, Pennsylvania took steps looking to a new act. The Pennsylvania old age assistance law of 1923 was held invalid because of a unique provision of the state constitution. The 1925 legislature created a new commission to make further study and passed a bill proposing an amendment to remove the obstructing provision from the constitution. Old age pension bills were introduced in more than a dozen states and passed one house in Indiana and New Jersey. Investigating commissions were created in Colorado and Minnesota. A preliminary report was made by the existing Massachusetts commission, and in Indiana a legislative commission reported in favor of statewide old age pensions.

Women and children

Rhode Island, Vermont and Hawaii accepted federal-state coöperation under the Sheppard-Towner act for protection of maternity and infancy, making forty-three states and Hawaii in all that have taken this action. In Wisconsin a new minimum wage law was enacted which, in view of the generally disastrous effects among the states of the United States Supreme Court decision in the District of Columbia case, is significant as indicating a determination to meet the court's opinion but at the same time get results. Despite widespread insistence during the year upon state rather than federal action against child labor, only nine states passed bills relating to the employment of children and in five states bills to raise standards of child labor laws were rejected.

Labor disputes

The most important action of the year with respect to labor disputes is the law enacted in Illinois prohibiting the issuance of injunctions against peaceful persuasion during strikes. The constitutionality of this act has recently been upheld by the Superior Court. New Jersey enacted a law permitting judges, in their discretion, to grant jury trials in injunction cases.

REORGANIZATION OF TEACHER TRAINING COURSES

The Commonwealth Fund has contributed $12,000 as an initial appropriation for the reorganization of teacher training courses under the direction of Dr. W. W. Charters. The first year will be spent in making a master list of the duties of teachers. Already 20,000 blanks have been sent to teachers asking them to list their duties. This will form the basis for an intensive study of duties during the coming year by the staff at the University of Chicago.